For CONTENTS, see pages iii and iv of Cover.

pp. 235-284.] [March 15, 1914.

TROPICAL DISEASES BULLETIN

IMPERIAL INSTITUTE 18 MAR 1914 LIBRARY

Vol. 3. 1914. No. 5.

EXCHANGE COPY

ISSUED UNDER
THE DIRECTION OF THE
HONORARY MANAGING COMMITTEE
OF THE
TROPICAL DISEASES
BUREAU.

General Editor:
THE DIRECTOR OF THE BUREAU.

HEALTH MYCOLOGICAL LABORATORY 26 MAY 1971

London:
TROPICAL DISEASES BUREAU,
Imperial Institute, S.W.

Sold by BAILLIÈRE, TINDALL & COX,
8, Henrietta Street, Covent Garden, W.C.

Price 1/6 net.]

[*All Rights Reserved.*

HONORARY MANAGING COMMITTEE.

Chairman:

The Right Honourable Sir J. West Ridgeway, G.C.B., G.C.M.G., K.C.S.I., LL.D.
(who is also Chairman of the Advisory Committee of the Tropical Diseases Research Fund).

Sir John Rose Bradford, K.C.M.G., F.R.S.
(representing the Royal Society).

Surgeon-General Sir David Bruce, C.B., F.R.S.

Surgeon-General Sir R. Havelock Charles, I.M.S., G.C.V.O.

Colonel Sir William B. Leishman, R.A.M.C., F.R.S., K.H.P.

Sir John M'Fadyean, M.R.C.V.S.

Sir Patrick Manson, G.C.M.G., F.R.S.

Sir Ronald Ross, K.C.B., F.R.S.

Sir S. Stockman, M.R.C.V.S.

Mr. J. A. C. Tilley
(representing the Foreign Office and Sudan Government).

Mr. H. J. Read, C.M.G.
(representing the Colonial Office),
with
Mr. A. Berriedale Keith, M.A., D.C.L.
of the Colonial Office, as Secretary.

STAFF OF THE BUREAU.

Director:

A. G. Bagshawe, M.B., B.C., D.P.H. Cantab.,
of the Uganda Medical Staff.

Assistant Director:

G. C. Low, M.A., M.D., *Lecturer, London School of Tropical Medicine.*

Librarian:

R. L. Sheppard.

Sectional Editors:

Andrew Balfour, C.M.G., M.D., D.P.H. Cantab.

Fleet-Surgeon P. W. Bassett-Smith, R.N., C.B., M.R.C.P.

Aldo Castellani, M.D.

Major S. Lyle Cummins, R.A.M.C., M.B., B.Ch.

Captain S. R. Douglas, I.M.S. (retd.).

H. B. Fantham, B.A., D.Sc.

Edward Hindle, Ph.D.

Colonel W. G. King, C.I.E., I.M.S. (retd).

R. T. Leiper, D.Sc., M.B., Ch.B.

J. B. Nias, M.D., M.R.C.P.

F. M. Sandwith, M.D., F.R.C.P.

J. Henderson Smith, M.B., Ch.B.

C. M. Wenyon, M.B., B.S., B.Sc.

Warrington Yorke, M.D.

Editor of the Tropical Veterinary Bulletin:

A. Leslie Sheather, B.Sc., M.R.C.V.S.

Now Ready. Price 7/6 net.

Postage in Great Britain, 4d. Abroad, 6d.

Pp. xvi. × 232, *with* 17 *Plates* 3 *Coloured.*

The Care AND Treatment of European Children IN THE Tropics.

By G. MONTAGU HARSTON, M.D.Lond., M.R.C.S.Eng., L.R.C.P.Lond., Fellow of the Society of Tropical Medicine and Hygiene; Fellow of the Royal Society of Medicine; Examiner in Medicine, Hong Kong University.

With introduction by Sir PATRICK MANSON, G.C.M.G., M.D.

LONDON.

BAILLIÈRE, TINDALL & COX,

8, Henrietta Street, Covent Garden.

TRADE MARK 'TABLOID' BRAND

QUININE INJECTION POCKET-CASE, NO. 45

Designed to simplify the preparation of aseptic hypodermic doses of Quinine and to ensure safety in their injection.

Ideal for practitioners in malarial and plague districts.

The case measures $5\frac{1}{4} \times 2\frac{7}{8} \times 1\frac{1}{4}$ *in. In nickel-plated metal, with doeskin cover. Price in London* 35/0. *Of all Pharmacists*

BURROUGHS WELLCOME & CO., LONDON

New York Montreal Sydney
Cape Town Milan Shanghai
Buenos Aires Bombay

xx 533 *Copyright*

TELEGRAMS— "PUBLICAVIT, EUSROAD, LONDON."

H. K. LEWIS,

ESTABLISHED 1844.

MEDICAL PUBLISHER AND BOOKSELLER.

Careful attention to Orders by Post, and from the Colonies and Abroad.

All Books specially packed for Book or Parcel Post, according to destination. Postage only charged.

H. K. LEWIS begs to point out that he can execute direct orders by return mails for the Publications of ALL PUBLISHERS.

COLONIAL LIBRARIES, COLLEGES and SIMILAR INSTITUTIONS—

Special facilities for executing Large Orders for Shipment to all parts of the World.

Quarterly List of New Books sent post free.

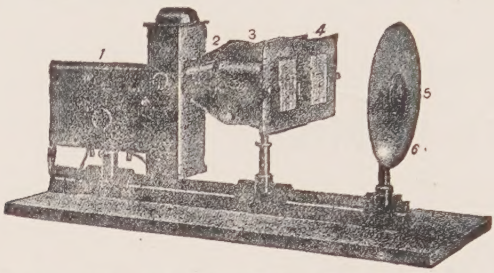
PERIODICALS, ENGLISH & FOREIGN, at Subscription Rates.

Books in General Literature not in Stock, supplied to Order.

136, GOWER STREET, and 24, GOWER PLACE, LONDON, W.C.

ZEISS

NEW SCIENCE LANTERN.



Complete with HAND-FEED ARC LAMP 4 Amps 110 Volts, OPTICAL BENCH, THREE LENS CONDENSER and ACHROMATIC PROJECTION LENS.

Price £11 10 0

With 5 Amp Lamp 220 Volts, **£11 16 0**

Booklet "14 S.L." Post Free.

CARL ZEISS (London), Ltd.,

13-14, GREAT CASTLE STREET, OXFORD CIRCUS, LONDON, W.

HORLICK'S MALTED MILK

MALTED BARLEY, WHEAT, and MILK in Powder Form.

THE IDEAL FOOD FOR HOT CLIMATES.

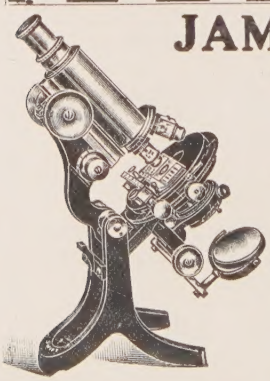
HORLICK'S MALTED MILK has given a new conception of what can be accomplished with a milk diet. It presents all the unrivalled food value of pure full-cream milk so enriched and modified with the soluble nutritive extracts of choice malted cereals, that it is quickly and easily assimilated. Its perfect digestibility renders it invaluable in all Intestinal troubles, and the ratio of protein to carbohydrate commends it as reliable reconstructive. By its use the necessity of a fresh milk supply is obviated, and as the ingredients are thoroughly pasteurised during manufacture, all possibility of germ contamination is precluded. Ready solubility and ease of preparation are also important factors.

NO ADDED MILK OR COOKING REQUIRED.

Offered in Sterilized Glass Containers especially adapted for use in the Tropics.

Samples to the Profession free by post on application to

HORLICK'S MALTED MILK CO., Slough, Bucks., England.



JAMES SWIFT & SON,

OPTICAL AND SCIENTIFIC INSTRUMENT MAKERS.

Contractors to all Scientific Departments of H.M. Government.

Grands Prix, Diplomas of Honour, and Gold Medals at London, Paris, Brussels, &c.

"UNIVERSAL" MICROSCOPE.

The latest and most highly developed stand for modern research work.

With centring, rotating mechanical stage.

Complete, with 3 objectives, 2 oculars, Abbe condenser, triple nosepiece, etc., in cabinet, **£26.**

Catalogue gratis on request.

UNIVERSITY OPTICAL WORKS,

81, TOTTENHAM COURT ROAD, LONDON.

TROPICAL DISEASES BUREAU.

TROPICAL DISEASES BULLETIN.

Vol. 3.] 1914. [No. 5.

TROPICAL SKIN DISEASES.

SABELLA (Pietro). **Studio Parallelo fra la Sifilide, la Framboesia e il Granuloma ulceroso delle Pudende, osservati nella Tripolitania (con Ricerche Istologiche e Sperimentali).** [Comparative Study of Syphilis, Framboesia, and Ulcerating Granuloma Pudendum in Tripoli.]—*Malaria e Malat. d. Paesi Caldi.* 1913. Mar. Vol. 4. No. 2. pp. 102-113.

The author gives an interesting comparative account of the three diseases. He emphasises the different clinical and histological aspects of syphilis and framboesia. As regards granuloma, he confirms in a general way the histological description given by GALLOWAY. While agreeing that some histological features of granuloma pudendum closely resemble those of yaws, he points out that the proliferative changes in framboesia mostly affect the epidermis, while in granuloma pudendum they affect chiefly the corium. At the end of his paper he brings forward tentatively, without committing himself, the suggestion that granuloma pudendum might be perhaps a late manifestation of yaws.

A. Castellani.

MAZZOLANI (D. A.). **Le Tigne, il Pian, le Piodermatosi ed altre Affezioni Cutanee curate negli Indigeni della Tripolitania.** [Tinea, Pian, Cutaneous Pyosis and other Skin Affections in Tripoli.]—*Riforma Medica.* 1913. Apr. 12. Vol. 29. No. 15. pp. 396-400. and Apr. 19. No. 16. pp. 425-428. With 10 figs.

The author quotes several cases of tinea, pian, various forms of cutaneous pyosis and ulcus tropicum observed by him in Tripoli, describing the principal symptoms and treatment. At the termination of his article he emphasises the importance of the practical results obtained in Tripoli by the establishment of a dispensary for skin diseases.

A. C.

(C17) Wt.2413/35—22.12.13. 2,000. 3.14. B.&F.Ltd. G11/4. A

CHALMERS (Albert J.) & O'FARRELL (W. R.). **Pyosis tropica in the Anglo-Egyptian Sudan.**—*Jl. Trop. Med. & Hyg.* 1913. Dec. 15. Vol. 16. No. 24. pp. 377-379.

The authors give a good general account of Pyosis tropica, of which they have observed two cases in Khartoum. They point out that though the affection was described and named by CASTELLANI in Ceylon in 1904, practically no literature exists on the subject. GABBI and SABELLA in 1912 reported some cases in Tripoli. The disease is a non-follicular pyosis characterized by the presence of thick yellow crusty lesions; when the crusts are removed, shallow irregular ulcers with non-undermined edges are seen, or more rarely small smooth nodules may be present.

The authors have grown from the lesions a Staphylococcus which they consider to represent a new variety: *Micrococcus pyogenes* var. *tropicus* Chalmers and O'Farrell 1913. The best treatment is by an autogenous vaccine.

A. C.

WISE (K. S.) & MINETT (E. P.). **Report of Tropical Diseases Research in the Government Bacteriological Laboratory, British Guiana, for the Six Months October 1912, to March 1913.**—Report to the Honorary Advisory Committee of the Tropical Diseases Research Fund. Received in Colonial Office, Sept. 30, 1913. [Proof.]

The bi-yearly report of tropical diseases research in the Government Bacteriological Laboratory, British Guiana, contains an interesting account of two cases of Tinea cruris. The disease is apparently rare in British Guiana. In both cases the lesions were quite typical. Scrapings were taken for examination, soaked in potash and mounted in glycerine; in both cases there was present a mycelium with a double contour showing true branching and composed of rectangular segments. The condition and cultural appearances closely resembled those of the organism described by CASTELLANI as *Epidermophyton cruris* in 1905, and by SABOURAUD as *Epidermophyton inguinalis* in 1907. Both the cases were treated with chrysophanic ointment, with good results.

A. C.

CULPEPPER (Wm. Louis). **A Case of Dhobie Itch (Tinea cruris), with Notes on the Cultivation of the Causal Fungus** (*Epidermophyton rubrum*).—*Amer. Jl. Trop. Diseases & Preventive Med.* 1913. Nov. Vol. 1. No. 5. pp. 397-401.

The author in a very complete paper gives an interesting account of a case of dhobie's itch in a military officer who contracted the affection in the Philippine Islands. The patient presented typical festooned lesions around the genitals and axillary regions.

After several fruitless attempts, the author succeeded in growing a fungus on sugar media producing dark reddish-pink colours. He comes to the conclusion that the fungus is the *Epidermophyton rubrum* Castellani 1905

A. C.

Conor (A.) & Marchetti (C.). **Un Nouveau Cas de Blastomycose observé en Tunisie.**—*Bull. Soc. Path. Exot.* 1913. Oct. Vol. 6. No. 8. pp. 556-559.

A native soldier was admitted into the hospital of La Goulette suffering from a large ulcer on the anterior aspect of the right fore arm. The lesion had lasted three months, having appeared as a small spot. In the axilla of the same side there was an abscess. There was no rise of temperature. The abscess was opened and two lymphatic glands were removed. From the pus so obtained inoculations were made into the peritoneal cavities of two guinea-pigs, this permitting an experimental study of the pathogenic organism. The parasites, as isolated from the spleen of the guinea-pig, gave the appearance of spherical or slightly ovoid cells measuring 2 to 6μ in diameter but without mycelium. In their interior the protoplasm showed fine and very refringent granulations.

The cultural characteristics are given in detail together with the results of the inoculation of the parasite into different animals.

One of the authors (Conor) in conjunction with Bruch has already published a similar case in Tunis, viz., in an infant born of French parents.

G. C. Low.

Splendore (A.). **Un'Affezione Micotica con Localizzazione nella Mucosa della Bocca, osservata in Brasile, determinata da Funghi appartenenti alla Tribù degli Exoascei** (*Zymonema brasiliense*, **n. sp.**).—Volume "*In Onore del Prof. Angelo Celli nel* 25° *Anno di Insegnamento.*" pp. 421-458. With 6 plates. 1912. Turin: Unione Tip.-Editrice Torinese.

The author, who has already published several interesting papers on the subject, gives again a description of a peculiar type of blastomycosis observed in Brazil, affecting often the oral mucosa and other mucous membranes. The affection was apparently first observed by Lutz, in 1904, who isolated a fungus somewhat similar to *Oidium lactis*. Lutz considered the condition to be identical with the so-called "Psorospermiasis" of Posadas and Wernicke, but Splendore, who has studied several cases very completely, comes to the conclusion that the affection is more similar to the blastomycoses of North America, though representing a separate variety.

To the Oidium or Monilia-like fungus isolated from the lesions the author gives the name of *Zymonema brasiliense*.

A. C.

Smith (J. E.). **A Note on Pinta.**—*Amer. Jl. Trop. Diseases & Preventive Med.* 1913. Nov. Vol. 1. No. 5. p. 402. With 1 plate.

The author describes a case of generalized leucoderma; the skin was depigmented but apart from that was normal. No fungi were found. He rightly points out that the condition, though called pinta by some natives, has nothing to do with the true pinta of Gastambide and Montoya.

A. C.

PINOY (E.). **Actinomycoses et Mycétomes.**—*Bull. Inst. Pasteur.* 1913. Nov. 15. Vol. 11. No. 21. pp. 929-938. With 7 figs.; and Nov. 30, No. 22. pp. 977-984. With 5 figs.

The author, who is a well-known authority on fungi, gives an excellent review of the present state of our knowledge of actinomycosis and mycetoma. The term mycetoma is applied to pathological conditions caused by filamentous fungi, and characterised by the presence of grains in the pus. He divides the pathological conditions into two groups :—

1. Actinomycoses—in which the grains are formed by very thin, not segmented mycelial filaments.

2. True Mycetomes—in which the grains are formed by thicker mycelial filaments, segmented and with a well-defined membrane.

Actinomycosis may be caused by the following fungi :—

Nocardia Harz, *Cohnistreptothrix israeli* Kruse, *Nocardia madurae* Vincent, *Nocardia pelletieri* Laveran (this fungus the author is inclined to identify with *N. madurae*), *Indiella somaliensis* Brumpt, *Nocardia asteroides* Eppinger (Syn. *N. freeri* Musgrave and Clegg), *Cohnistreptothrix thibiergei* Pinoy and Ravaut.

The true mycetomata so far observed are due to fungi of the genus *Madurella*, *Aspergillus*, and *Sterigmatocystis*. The commonest fungus of the first mentioned genus is *Madurella mycetomi* Laveran, common in India and Africa. Another species found in North Africa is *Madurella tozeuri* Ch. Nicolle and Pinoy.

Of Aspergillus-like fungi the author mentions *Sterigmatocystis nidulans* Eidam var. *nicollei* Pinoy and *Aspergillus bouffardi* Brumpt.

The author points out the difficulties met with in experimentally reproducing mycetoma. He has succeeded with *Aspergillus nidulans* var. *nicollei* in pigeons, while NICOLLE has reproduced the disease in the same animals with *Madurella tozeuri*.

In conclusion the author advises an intensive treatment by potassium iodide; the patient should have a diet poor in kitchen salt, potassium iodide being substituted.

A. C.

SUTTON (Richard L.). **Mycetoma in America.**—*Jl. Amer. Med. Assoc.* 1913. May 3. Vol. 60. No. 18. pp. 1339-1342. With 6 figs.

Sutton gives a full description with illustrations of two cases of mycetoma, or Madura foot, which have come under his own observation. The recognition of this disease in America is of quite recent date. So far five other cases have been recorded as originating in America; of these two were Mexicans, one a French Canadian, and one an Italian; it is very doubtful whether the 5th case was true mycetoma.

The infections in both Sutton's cases belonged to the ochroid variety. The cases were typical. In one amputation of the foot was resorted to; the other patient refused this and was treated with potassium iodide, copper sulphate, and the X-rays as recommended by STELWAGON, various preparations of iodine being employed locally. After two months of this treatment the foot was somewhat less swollen but the improvement was very slight.

The animal experiments of MUSGRAVE and CLEGG are referred to.

These investigators isolated an organism from a typical case of three years' duration in a Filipino woman. To this organism they gave the name *Streptothrix freeri*, and with it performed inoculation experiments on 40 animals, in three of which (monkeys) they successfully induced Madura Foot.

[*Streptothrix freeri* Musgrave and Clegg 1907 is a synonym of *Nocardia asteroides* Eppinger 1890, as pointed out by Musgrave and Clegg themselves in later publications.]

A. C.

Carini (A.). **Sopra un Caso di Micetoma della Guancia.** [A Case of Mycetoma of the Cheek.]—*Giorn. Italiano d. Malattie Veneree e d. Pelle.* 1913. No. 2. 3 pp. With 2 figs.

The author describes a case of mycetoma of the left cheek in a European observed by him in Brazil. The grains found in the pus exuding from the sinuses were yellowish, rather soft and roundish. The microscopical examination showed the presence of abundant, very delicate, branching mycelial filaments with no claviform swellings. The fungus could not be cultivated. The patient was treated with potassium iodide in full doses with complete success.

A. C.

Arlo (J.). **Pied de Madura avec Envahissement du Triangle de Scarpa et de la Partie inférieure de la Paroi abdominale.**—*Bull. Soc. Path. Exot.* 1913. July. Vol. 6. No. 7. pp. 485-487; and *Ann. d'Hyg. et Méd. Colon.* 1913. April-May-June. Vol. 16. No. 2. pp. 440-442.

The author describes a case of mycetoma with invasion of Scarpa's triangle of the same side, seen on the Ivory Coast. The grains found in the pus were white; the microscopical examination revealed the presence of delicate mycelial filaments of a fungus, probably *Nocardia madurae*. Attempts at cultivation failed.

A. C.

Brault (J.). **Note sur les Cultures de** *Madurella mycetomi*.—*Bull. Soc. Path. Exot.* 1913. June. Vol. 6. No. 6. pp. 407-409.

In previous papers the author has given the characters on the usual laboratory media of *Madurella mycetomi* isolated from a case of black mycetoma in Algeria. In the present communication he gives the results of his attempts at cultivating the hyphomyceti on the indigenous shrubs and plants of Algeria. He has obtained successful results with ficus and some other plants.

A. C.

Wiener (Emil). **Ueber einen Vibrionenbefund in einem Yemengeschwür.** [On a Vibrio found in a Yemen Ulcer.]—*Wien. Klin Wochenschr.* 1913. Apr. 24. Vol. 26. No. 17. pp. 667-669.

The author at El Tor has isolated a germ with all the characteristics of the cholera vibrio from a Yemen ulcer or ulcus tropicum. Contamination of the ulcer by this vibrio may have taken place by the patient washing the sore with infected water. A. C.

MARTINI. **Ueber einen Fall von Granuloma venereum und seine Ursache.** [A Case of Granuloma Venereum and its Etiology.]—*Arch. f. Schiffs- u. Trop. Hyg.* 1913. March. Vol. 17. No. 5. pp. 160-166. With 1 plate.

The author describes fully a case of granuloma venereum in a German sailor. The bacteriological researches carried out in this case are interesting, the author coming to the conclusion that the cause of the malady is a capsulated diplococcus which he has grown. The germ is probably similar or identical with the one described by SIEBERT and FLU.

A. C.

WEINSTEIN (Henry). **A Description of Ainhum as seen on the Canal Zone, with Report of Interesting Cases occurring in One Family.**—*Southern Med. Jl.* 1913. Oct. Vol. 6. No. 10. pp. 651-656.

A description of the disease and a historical resumé is first given and the etiology is discussed. The cases seen by the author were specially interesting, because there was a family history in them revealing a strong hereditary tendency affecting all the males in three generations, and apparently transmitted by the male progeny. Further, a detailed histological examination was made of one of the amputated toes by DARLING who found the following changes :—

"The keratinous ring presents the usual thick horny appearance seen in this condition. It rises above the general level and is lodged in a fossa lined on either side by normal epithelium. This ring is made up of thick laminae of keratinous squamous epithelium. The stratum malphighii is relatively narrow and the corium beneath is bereft of papillae and is extremely narrow. In fact, the corium and the periosteum of the bone so rapidly merge into one another that they can hardly be differentiated. This obliteration of the papilla, it is very evident, is due to the constricting horny ring.

"The stratum malphigii increases in amount as the normal skin is approached and its cells become larger and vesicular. The papillae also become more evident, though they are still nodose and not deep and filiform as in the normal skin at this location. At the margin of the horny ring the corium is greatly altered by ulceration, for it is infiltrated by polymorphonuclear leucocytes, red cells and fibroblasts. Many newly formed arterioles and capillaries are also seen. At this point the usual picture of ainhum is not seen, but rather one of ulceration and repair." In the tissue distal to the ring "the epithelium and corium present the usual deep filiform appearance usually seen in the skin of this region, and the blood vessels, sweat glands, nerve bundles and the paccinian corpuscles appear normal."

G. C. L.

YAWS.

Kloppers (J. W. E. R. S.). **Opmerkingen over Framboesia.** [Observations on Yaws.]—*Geneeskundig Tijdschrift voor Nederlandsch-Indië.*—1913. Vol. 53. No. 1. pp. 18-31.

It seems to be a pressing question in Java whether it is desirable to treat yaws on a extensive scale by means of salvarsan, having regard to the cost of the remedy. This question was referred to the author for decision by his superiors in the public service, and he answers it in the negative.

Syphilis is apparently not very common amongst the natives of Java, while yaws is very prevalent, and therefore it becomes a matter of some practical importance whether an expensive remedy should be squandered upon a comparatively benign complaint, instead of being reserved for the more virulent one. This, and the allied question of encumbering hospitals with cases which would not otherwise present themselves for treatment, are discussed by the author at considerable length. A large part of the paper is taken up with a comparison between the clinical symptoms of yaws and those of syphilis, of a nature not calculated to interest the English reader, who finds this subject amply dealt with in the text-books. The article also contains a number of particulars as to the distribution of yaws in various parts of Java, which are of no general interest.

J. B. Nias.

Kernéis (J.). Monfort (F.) & Heckenroth (F.). **Quelques Remarques sur le Pian au Congo francais. Pian et Ulcères phagédéniques traités par le 606.**—*Bull. Soc. Path. Exot.* 1913. Apr. Vol. 6. No. 4. pp. 243-247.

Cases of yaws in the French Congo are far from rare ; the disease was first described in that region by Bastian in 1881 under the name of "Aboukoué." The clinical appearance of the disease does not much differ from that observed in other countries, but severe symptoms such as fever during the incubation period are rare. Salvarsan acts well, but relapses may occasionally take place notwithstanding the treatment. The authors have used salvarsan in ulcus tropicum as well as in yaws with good results.

A. Castellani.

Windward Islands [St. Lucia]. **Extract from Annual Reports on Hospitals and Dispensaries, 1912-13.**—Report to tho Honorary Advisory Committee of the Tropical Diseases Research Fund.

The Extract from the Annual Reports on the Hospitals and Dispensaries of the Windward Islands contains an account of the use of salvarsan in the Yaws Hospital. Of 245 patients treated with this drug during the year, 229 were discharged cured. This result shows the advantage of the salvarsan method over the old treatment. The dose given is 0·6 gm. and the intramuscular method only is used at present. The after treatment consists of rest in bed, sea-bathing,

and mercury in Donovan's solution. So far there have been twelve recurrences of cases, which is 5 per cent. of the total number treated. These cases have been again admitted for treatment.

A. C.

Cockin (R. P.). **Treatment of Yaws by Intramuscular Injections of Salvarsan. A Report on a Series of 45 Cases treated at the Yaws Hospital, St. George's, Grenada, B.W.I.**—*Lancet.* 1913. Dec. 6. pp. 1609-1610.

The author has treated 45 further cases of yaws with salvarsan given intramuscularly with very good results. He prefers the intramuscular to the intravenous methods, there being no need of skilled nursing subsequent to the injection. [See also this *Bulletin*, Vol. 1. p. 144.]

A. C.

Radloff. **Frambösie und Salvarsan.**—*Arch. f. Schiffs- u. Trop. Hyg.* 1913. July. Vol. 17. No. 13. pp. 459-460.

Atoxyl had no action on a case of framboesia while salvarsan given intravenously was most successful.

A. C.

i. Scherschmidt (Arthur). **Erfahrungen mit Joha bei Frambösie.**—*Arch. f. Schiffs- u. Trop. Hyg.* 1913. Aug. Vol. 17. No. 16. pp. 552-559.

ii. Weck. **Bericht über Erfahrungen mit Joha.**—*Ibid.* pp. 559-564.

i. The author gives the results obtained by treating yaws patients with "Joha," the trade name given to a suspension of salvarsan in oil. He comes to the conclusion that this preparation given intramuscularly is less successful than ordinary salvarsan given intravenously: its higher cost is also against its use for natives.

ii. Weck on the other hand comes to the conclusion that "Joha" is very useful in native practice.

A. C.

SLEEPING SICKNESS.

Sierra Leone. **Memorandum by the Principal Medical Officer** [Rice (Thos. E.)], **with Reports by** Drs. H. E. Arbuckle **and** John Y. Wood. — Received at the Colonial Office December 16, 1913. [MSS.].

An account is here given of 5 cases of sleeping sickness discovered in Freetown, Sierra Leone. Three other cases had previously been reported, so that in all 8 cases of the disease were recognised in Freetown during the second half of the year 1913.

Soon after the second case was reported, a circular was sent to each Medical Officer asking for information regarding the existence of sleeping sickness in his district and the prevalence of *Glossina palpalis*. From the replies received it would appear that the disease has only, so far as the Protectorate is concerned, been recognised in the Koinadugu District, the Medical Officer of which reports 3 cases and alludes to others.

[Eighteen cases of sleeping sickness were diagnosed in Sierra Leone by Grattan in 1905.*]

W. Yorke.

Chatard (J. A.) & Guthrie (C. G.). **Human Trypanosomiasis: Report of a Case observed in Baltimore.**—*Amer. Jl. Trop. Diseases & Preventive Medicine.* 1914. Jan. Vol. 1. No. 7. pp. 493-503. With 1 plate.

This paper gives a clinical account of a case of sleeping sickness in a European; the disease was contracted in the Belgian Congo. No new points are brought out. Between the first course of treatment, on the discovery of trypanosomes, and the patient's being seen by the authors he carried on his occupation for three years and had no occasion to consult a doctor.

W. Y.

Thiroux (A.) & Pelletier (J.). **De la Méningite aiguë dans la Trypanosomiase humaine.** [Clinique d'Outre-Mer.]—*Ann. d'Hyg. et de Méd. Coloniales.* 1913. Oct.-Nov.-Dec. Vol. 16. No. 4. pp. 1188-1190.

In sleeping sickness meningeal symptoms appear suddenly at any time during the second stage of the disease and are due to an invasion of the meninges. The first symptom observed is a violent and persistent headache; but as headache is encountered in ordinary forms of sleeping sickness, only a relative importance can attach to this symptom. That which precedes acute meningitis is, however, more intense and more persistent. Following the headache, which sometimes precedes other symptoms by eight or ten days, are fever and Kernig's sign; later is noticed stiffness of the neck and spine accompanied often by a fall of temperature.

* *Jl. Royal Army Med. Corps.* 1906. Vol. 7. pp. 485-493.

Acute meningitis may supervene during treatment; the course of of the disease is not modified by atoxyl medication and death soon occurs. It may appear early in the disease when the symptoms have not been sufficiently characteristic to permit of a clinical diagnosis.

The possibility of a secondary infection with epidemic cerebrospinal meningitis in such countries as Senegal must be considered. The authors negative this however in the majority of cases. Details of two cases are given. In the first, lumbar puncture yielded an absolutely transparent liquid containing but few mononuclear leucocytes, no polymorphonuclear leucocytes and a few trypanosomes. Examination of a stained specimen of the deposit obtained by centrifuging did not reveal the presence of meningococci.

W. Y.

Lundie (Alexander). **The Detection of Trypanosomes in Animals**—*Jl. Trop. Med. & Hyg.* 1914. Jan. 15. Vol. 17. No. 2. p. 22.

The following method for diagnosing the presence of trypanosomes in animals, where plenty of blood can be obtained, was found to be useful. Blood is allowed to flow directly from the cut throat into a test tube containing 5 gr. of potassium citrate dissolved in 5 cc. of sterile water, until the tube is three parts full. After mixture of the contents by rolling the tube it is set aside until time can be found to examine it. Within half an hour there is always a little clear fluid on the top of the blood and if there are any trypanosomes at all in the blood they will certainly be found in this situation. In films made from the clear fluid the trypanosomes stain well.

The author states that this method can be used for studying the development of trypanosomes. To study the life history of the trypanosomes in tsetse flies, one can imitate the chemical changes in the fly's stomach fairly well by mixing the fresh blood with a sufficient volume of hydrochloric acid, diluted so as to contain ·02* per cent. by weight of the acid.

W. Y.

Roubaud (E.) & Lafont (A.). **Expériences de Transmission des Trypanosomes humains d'Afrique par les Moustiques des Habitations** (*Stegomyia fasciata*).—*Bull. Soc. Path. Exot.* 1914. Jan. Vol. 7. No. 1. pp. 49-52.

This paper records attempts made at Dakar, French West Africa, to transmit human trypanosomes –*T. gambiense* and *T. rhodesiense*— by means of laboratory bred mosquitoes. The mosquitoes employed were mainly *Stegomyia fasciata*, but with these there were also a few *Culex fasciatus* and *Culex decens*.

The mosquitoes were bred out from the larvae in large grass vessels $2 \times 1{\cdot}5 \times 1{\cdot}5$ metres in size, placed in a large mosquito-net chamber. The experimental animals, partially denuded of hair, were placed in wire cages introduced into the chamber. The authors endeavoured

* According to a communication received from the author, 0·2 is the correct percentage.

to vary as far as possible such conditions of experiment as the variety of the animals employed, the number of trypanosomes in their blood, the length of time they were exposed to the bites of the mosquitoes and the relative distance between the cages containing the healthy and the infected animals.

Details of the various experiments are given. It was found that transmission of the trypanosomes did not occur, in spite of the large number of mosquitoes employed, except when the cage containing the healthy animal was placed quite close to that containing a heavily infected animal. Separation of the cages by one metre is sufficient to protect the healthy animal from infection. The authors suggest however that such negative results do not preclude the possibility of the transmission to man of trypanosomes by mosquitoes in nature. The animals used (monkeys, rats and guinea-pigs) are not so easily bitten by mosquitoes as man, especially the native on account of his scanty clothing.

These experiments prove that it is possible for mosquitoes to act as mechanical vectors of human trypanosomes in a limited enclosure and they show that the active virus is not conserved by the mosquito beyond 24 hours. [For other works on this subject see this *Bulletin* Vol. 2. p. 255 and *Sleeping Sickness Bulletin* Vol. 1, p. 70.]

W. Y.

i. Duke (H. Lyndhurst). **Wild Game as a Trypanosome Reservoir in the Uganda Protectorate: with some Criticisms on the Current Methods of Diagnosing these Protozoa.**—*Arch. f. Protistenkunde.* 1914. Jan. 6. Vol. 32. No. 3. pp. 393-406.

ii. **Wild Game as a Reservoir for Human Trypanosomes. An Analysis of the Available Evidence from the Northern Shores of Lake Victoria Nyanza.**—*Brit. Med. Jl.* 1914. Feb. 7. pp. 289-292.

In these papers the author deals with the question of the wild game as a reservoir of human and animal trypanosomes. The observations here recorded were published in reports to the Royal Society and have already been reviewed (see *Sleeping Sickness Bulletin* Vol. 4. pp. 171 and 320 and this *Bulletin* Vol. 2. p. 241).

The second paper is entirely devoted to a discussion whether the *gambiense*-like trypanosome found by the author in 'wild fly' and situtunga on Damba Island are descendants of the *T. gambiense* which caused the recent epidemic in Uganda or whether they are merely parasites of the antelope and not capable of surviving in the human host. The evidence accumulated is examined in detail and the points demanding attention are considered in the form of a series of question and answers.

After an exhaustive consideration of the subject the author writes: "The available evidence justifies the conclusion that the trypanosome recovered from the Damba situtunga and from the wild *Glossina palpalis* in the islands and on the mainland coasts is a descendant of the *T. gambiense* of the epidemic."

W. Y

Beck (Max). **Untersuchungen über ein am Rovuma (Deutschostafrika) vorkommendes Trypanosoma beim Menschen.** [Investigations on a Trypanosome found in Man in the Rovuma District.]—*Arch. f. Schiffs- u. Trop. Hyg.* 1914. Feb. Vol. 18. No. 3. pp. 97-101. With 1 plate.

A description is given of the human trypanosomes causing the small foci of sleeping sickness in the Rovuma district of German East Africa near the Portuguese boundary. In all, 72 cases have been discovered up to the present. So far as is known the disease is spread exclusively by *Glossina morsitans*. In the infected districts 8-10 per cent. of these flies were infected with trypanosomes, but as experimental animals were not available the author is unable to state how many were infective nor to identify the trypanosomes.

The human trypanosome was compared with *T. brucei* obtained from a tsetse infected mule. A brief account of the morphology of the human trypanosome is given; comparative measurements of the two trypanosomes could not be undertaken owing to absence of a micrometer eyepiece. On examining the pathogenicity of the two strains it was found that the human trypanosome was the more virulent. Dogs infected with this strain died on an average in 18-21 days, monkeys in 20-28 days and rats in 10-12 days dogs infected with *T. brucei* lived for 29 days, monkeys for 40 days and rats for 18-20 days. The incubation period was longer in the case of the latter parasite. Certain irregular and rounded parasites (figured in the plate accompanying the paper) were found in animals infected with the human trypanosome.

Further attempts were made to differentiate the two parasites by aid of certain biological tests—agglomeration, trypanolysis, and cross-immunisation. As a result of these experiments the author concludes that the human trypanosome is not identical with that found in wild game (waterbuck and eland).

The following results were obtained from an examination of domestic animals and wild game in the infected regions. Of 8 dogs 5 were infected, of 3 goats none, 2 of 3 waterbuck and 1 of 2 eland; a gnu, a leopard and a spotted hyena were negative, as were also a large number of monkeys and birds.

W. Y.

Prentice (George). **Sleeping Sickness, Tsetse, and Big Game.**—*Brit. Med. Jl.* 1914. Feb. 7. pp. 293-294.

The author gives his experience of the relation of tsetse fly and wild game in Nyasaland and Rhodesia where with the exception of three furloughs he has worked since 1894. He states that time and again he travelled with riding animals and dogs through districts where in the pre-rinderpest days Arab caravans used to travel at night in order to save their animals from attacks of tsetse. Yet in 1894-6 both Nyasaland and Rhodesia were remarkably free from tsetse. The explanation given is that after the rinderpest had killed off most of the big game tsetse fly disappeared. The author states that since 1894 he has watched the spread of tsetse, until at the present time it swarms in districts where previously not a single fly was encountered.

A brief account is given of the ravages wrought by trypanosome diseases in domestic stock and it is suggested that there is at the present time a considerable amount of sleeping sickness in Nyasaland. Dealing with the assertion that tsetse can and does exist where it cannot possibly depend upon game for its sustenance, game being absent, Prentice states that this does not hold good of *G. morsitans* in Nyasaland and Rhodesia. He does not believe that if the game were driven out tsetse would attack man and his domestic animals more vigorously than at present, and states in support of this that when rinderpest killed off the game the tsetse did not invade the villages but disappeared or remained only in small patches near the foothills, where small herds of game had escaped the rinderpest. There is ample proof that wherever game is killed off by disease or hunted out *G. morsitans* disappears and there is no proof to the contrary.

The author is of opinion that in order to eradicate the disease a severe onslaught must be made upon the wild animals until these are driven back from human settlements and from public highways.

W. Y.

Kolle (W.). Hartoch (O.) & Schürmann (W.). (i) **Weitere Mitteilungen über chemotherapeutische Experimentalstudien bei Trypanosomeninfektionen.** [Further Experimental Studies on the Chemotherapy of Trypanosomiasis.]—*Deut. Med. Wochenschr.* 1914. Jan. 29. Vol. 40. No. 5. pp. 212-214.

(ii) **Chemotherapeutische Experimentalstudien bei Trypanosomeninfektionen. ii Mitteilung.**—*Zeitschr. f. Immunitätsforsch. u. experim. Therapie.* 1. Teil. Orig. 1914. Jan. 22. Vol. 20. No. 5. pp. 436-475.

These papers give an account of further work on the treatment of animals, experimentally infected with trypanosomes, by means of antimony preparations. The previous communications reviewed in this *Bulletin* (Vol. 2, pp. 134 and 351), gave the results obtained in the treatment of small laboratory animals. It will be recalled that the chief methods recommended were the intramuscular injection of Trixidin (antimony trioxide in oily suspension), and the application of insoluble preparations of antimony in the form of ointment. The authors found that the estimate of the value of intramuscular injection of Trixidin, which they had formed from their experiments upon small animals, proved too high when they applied the treatment to large animals. In mice and guinea-pigs little or no local reaction followed the intramuscular injection of the drug, but quite different results were observed in rabbits, monkeys and dogs. In these animals in most cases injection into the muscles was attended by local swelling, which did not disappear but proceeded to abscess formation, with spontaneous bursting in cases where incision was not performed. Rabbits were affected by a wide spread necrosis of tissue rather than a definite abscess, and incision was here of little service as the process went on to affect the deeper structures, and the animals died after much loss of weight and condition. Occasionally however even in rabbits large doses were without unpleasant sequelae. The complication of abscess formation compelled the authors to modify

their view that Trixidin by intramuscular injection would be found a useful means of treating trypanosomiasis in large animals. Efforts to counteract the tendency to abscess formation were made and many drugs used in conjunction, for example calcium chloride, with a view to obviating this effect, but without success. The plan of making small and numerous injections of Trixidin in various parts of the body was also unsuccessful in preventing abscess formation. The method of intramuscular injection was therefore abandoned in favour of intravenous injection of antimony trioxide in physiological salt solution. They found it necessary for this purpose to obtain a much finer subdivision of the particles of the trioxide than exists in the commercial preparation. Not only would such subdivision eliminate the danger of embolism, but also by providing a greater surface would give a more active therapeutic effect. By special methods they obtained a very fine suspension of the trioxide in salt solution suitable for injection intravenously and devoid of danger from embolism.* They have made experiments with this suspension on animals and consider that it can be used in the case of human beings. They intend to publish later an account of the experiments undertaken with this colloidal-like preparation of antimony.

The method of inunction, which the authors described in their previous paper in regard to mice, has been applied to larger animals (dogs). The ointment used was a 20 per cent. concentration of Dimethyl-phenyl-pyrazolon-antimon-trichlorid Eucerin (SCHEITLIN), and the sites for inunction were the shaved belly and chest and the inner surface of the hind legs. The effect on the skin which had been observed in mice was also noted in dogs, namely a slight chickenpox-like eruption which soon disappeared. Repeated inunctions at intervals of 5-12 days after the first appearance of parasites in the blood, and varying in number from 1 to 9, were employed. Most of the dogs died of chronic poisoning, but in all cases the parasites in the peripheral blood diminished in number, and in three cases a definite negative condition of the blood resulted as shown by subinoculation.

Large numbers of tables are given showing in detail the results of treatment of various laboratory animals by the different methods. The prophylactic value of antimony trioxide in guinea-pigs and rabbits is shown by experiments, where comparatively small doses given intravenously prevented the development of dourine infection. The conclusions are :—

The therapeutic effects of antimony trioxide observed in mice infected with trypanosomes are also observed in chronic infections in the larger animals, if the formation of abscesses is avoided by means of using intravenous injection. The combination of antimony trioxide with other soluble, quickly operating trypanocides ought to prove of great value in the treatment of trypanosome infections.

The simple application of insoluble organic antimony compounds in the form of an ointment can influence favourably the disease processes in dogs infected with dourine. The fact that dogs have a marked intolerance to antimony does not exclude the possibility of curing other animals by the inunction method.

A postscript refers to the treatment of naturally infected cattle

* PLIMMER found this out and published it in 1910. His method (intravenous injections of metallic antimony in fine division) has been used on man by RANKEN, more than 1,000 injections having been given. (This *Bulletin*, Vol. 1, p. 663.) A.G.B.

in East Africa by Professor Ostertag with Trixidin. Cattle treated by him remained free from trypanosomes for two months (to the time of writing).

W. Y.

Brieger (L.) & Krause (M.). **Neues über Tryposafrol und Novotryposafrol.**—*Berlin. Klin. Wochenschr.* 1914. Jan. 19. Vol. 51. No. 3. pp. 101-103.

Reference is made to the previous work of the authors on the treatment of experimental trypanosomiasis by safranin derivatives, more especially that designated 'Tryposafrol' (see *Sleeping Sickness Bulletin* Vol. 4, pp. 60 and 328).

The present paper is a rejoinder to Rietz and Leupold who stated that tryposafrol is of no value as a remedy in mice, rats and guinea-pigs experimentally infected with various strains of *T. brucei* (see this *Bulletin* Vol. 2. p. 354). The authors consider that Rietz and Leupold did not follow their directions for the administration of the drug. They procured the strains (nagana ferox of Ehrlich and Morgenroth's strain of *T. brucei*) used by Rietz and Leupold and treated animals infected with these strains themselves. Of 44 guinea-pigs treated with the dye all were alive and negative on the 90th day, whereas all the control animals were dead by the 60th day.

In order to test the toxicity of the drug a dog was given 1 gm. daily for 50 days; it was then killed and examined. Nothing pathological was found.

The authors intend to criticise the unfavourable results of treating human sleeping sickness recorded by Lurz (see this *Bulletin* Vol. 2. p. 456) in a future communication.

A summary is given of the excellent results obtained by various workers who have employed tryposafrol in the treatment of such infections as foot and mouth disease, red water in cattle, and distemper in dogs. In all these conditions the drug had a remarkably beneficial action.

W. Y.

Ciuca (A.). **Action des Abcès de Fixation sur la Trypanosomiase expérimentale du Cobaye et sur son Traitement par l'Atoxyl.**—*Ann. Inst. Pasteur.* 1914. Jan. Vol. 28. No. 1. pp. 6-20.

Reference is made to the fact that abscesses produced by various substances, especially essence of terebene, have been used in the treatment of divers infectious maladies with the object of aiding other medicants in the amelioration and cure of the disease. L. Martin has noticed considerable benefit in a European case of sleeping sickness, following the formation of abscesses produced accidentally by subcutaneous injection.

Technique. The author decided to study this subject experimentally and for this purpose used guineapigs infected with surra and with *T. brucei* of Uganda. (The work of Laveran and Thiroux showed that animals infected with these trypanosomes could not be cured with atoxyl alone). The ordinary essence of terebene of commerce was employed and amounts varying between 0·5 and 1 cc. were injected as high up as possible on the external surface of the thigh. The animals were much

disturbed during the half hour following the injection. After 24 hours the site of injection was warm and looked inflamed ; the inflammation reached its maximum in 72 hours. The abscess forms after 4 or 5 days and should always be opened ; the pus is thick, of a dirty white colour, and smells strongly of terebene ; when dressed carefully the abscess heals in 10 days. The amount of atoxyl administered was 1·5 to 2 cc. of a 1 per cent. solution.

Experiments. In all, 42 guineapigs were infected with *T. brucei* of Uganda and 10 with *T. evansi*. Of the first 42 animals 11 served as controls ; they died in from 11 to 56 days (average 30). Of the second 10 animals 4 were used as controls and died in from 17 to 41 days. The remaining 37 guineapigs were treated either with essence of terebene alone, or with this in conjunction with atoxyl.

Group A., consisting of guineapigs treated only with essence of terebene. In the first series of experiments the animals received one or more injections, the first being given at the same time as the inoculation of the trypanosomes. In the second series a single injection of terebene was given at the height of the infection. It was found when the drug was given at the same time as the inoculation of trypanosomes that the incubation period was prolonged. When administered at the height of infection the drug caused a diminution in the number of trypanosomes. This diminution commenced after 24 to 48 hours and led frequently to a complete disappearance of parasites for 4 or 5 days ; the parasites subsequently reappeared and the animals died, but life was usually considerably prolonged.

Group B., consisting of guineapigs treated with atoxyl and essence of terebene. In the first series of experiments two injections of terebene and atoxyl were given, whilst in the second series the animals received several injections of the drugs. As a result it was observed that repeated injections of atoxyl in animals infected with *T. brucei* of Uganda generally produced either no effect at all or merely a transitory disappearance of the trypanosomes ; only rarely was a sterilisation of longer duration noted. When atoxyl was given in conjunction with terebene, a disappearance of the parasites lasting several days always resulted. If the injections of atoxyl are frequently repeated in animals in which an abscess has been produced by terebene, the trypanosomes almost always disappear for a considerable period ; there is great prolongation of life and sometimes complete cure. Guineapigs of 400 to 600 grammes usually bear 12 or 13 or even more injections of atoxyl (each injection being ·015 to ·02 grammes). It is not necessary to exceed a dose of 1 cc. of essence of terebene, but the number of doses is limited by the emaciation produced. The combined treatment is superior to treatment by atoxyl alone. The abscess of fixation produced by the essence of terebene probably facilitates the formation of trypanotoxyl, the true active substance of atoxyl on the trypanosomes in the infected organism.

The author considers that one ought to use essence of terebene in the treatment of trypanosomiasis in animals resistant to arsenicals, in order to facilitate the action of the latter substances on the trypanosomes. Probably this method of treatment is most suitable in the case of larger animals when one can produce local abcesses without general debility of the organism.

W. Y.

Heckenroth (F.) & Blanchard (M.). **Etat des Méninges et Injections intra-rachidiennes de Néosalvarsan dans la Trypanosomiase humaine.**—*Bull. Soc. Path. Exot.* 1914. Jan. Vol. 7. No. 1. pp. 63-68.

In the course of previous work (see this *Bulletin* Vol. 2, p. 587), it was shown that, although one or two intravenous injections of salvarsan and of neosalvarsan cause in certain cases a definite sterilisation of the blood, nevertheless the course of the disease is not arrested and the patient dies. In such cases the cerebrospinal fluid always contains many lymphocytes, and trypanosomes on which the drug has no action. This observation led the authors to examine the meninges of sleeping sickness patients as regards their permeability to neosalvarsan, and to determine the effect of intra-meningeal injection of the drug.

It is generally recognised that although in health the meninges are impermeable from without inwards this property disappears when the membranes are damaged by various infections. Even at the beginning of trypanosomiasis the meninges are involved, as is shown by the lymphocytosis occuring in the cerebrospinal fluid and also by autopsy, when meningeal lesions are frequently the only microscopic evidence of this disease.

Experiments were undertaken to ascertain if the lesions of the meninges in sleeping sickness would permit the passage into the cerebrospinal fluid of various drugs (potassium iodide, atoxyl, emetic, and salvarsan), of the normal haemolysin against sheep's red cells, and of complement. The results were negative ; to all these substances the meninges were impermeable.

Reference is made to the unfavourable results obtained by Kopke with subdural injection of salvarsan and neosalvarsan in sleeping sickness cases (see this *Bulletin* Vol. 2, p. 586).

The authors decided to repeat this method of treatment in very bad cases to ascertain whether the inactivity of the medicant, when given intramuscularly in these cases, is due to impermeability of the meninges to the drug or to a special resistance of the trypanosomes found in the cerebrospinal fluid, which may possibly have become resistant owing to the passage of very minute quantities of the drug into the cerebrospinal fluid.

Neosalvarsan (1·3 to 2 cgm. in 3 cc. of distilled water) was injected subdurally in 9 patients. Before the injection was made 10 cc. of cerebrospinal fluid was removed and examined. In all cases there was considerable lymphocytosis with more or less numerous trypanosomes. A second lumbar puncture was made eight days later, when it was found that the trypanosomes and lymphocytosis had disappeared. This condition was maintained over a period of five months in one of the patients, but in others the survival was too short or the date of injection too recent to allow of any conclusions being drawn. In contradistinction to the observation of Kopke the authors have not observed any unfavourable sequelae, but the injections were not followed by any marked amelioration of the general condition.

A consideration of the results of treating numbers of cases in which the central nervous system is involved, at the Pasteur Institute of Brazzaville, shows that no patient in this condition has been cured.

The non-success resulting from subdural injections of neosalvarsan indicates that at a certain stage the meningeal lesions are irremediable, in spite of the fact that the treatment may sterilise the cerebrospinal fluid and cause the lymphocytosis to disappear.

W. Y.

Grossule (Virgilio). **Sulla Guaribilita della Trypanosi o Malattia del Sonno.** [On the Curableness of Sleeping Sickness.]—*Gazz. d. Ospedali e Cliniche.* 1913. Oct. 30. Vol. 34. No. 130. pp. 1359-1361.

The author observes that there is a tendency on the part of certain sections of the press to propagate the idea that sleeping sickness is greatly diminishing in some parts of Tropical Africa, and to attribute this diminution to the actual cure of individual cases by means of atoxyl. He points out how difficult it is to be sure that any case has been cured by treatment, and emphasises the view that improvement in the general condition of the patient, and absence of parasites from the peripheral blood and the glands, are of little value when an opinion is to be formed as to the success of treatment. He relies upon the examination of the cerebrospinal fluid, and considers as normal a clear cerebrospinal fluid which contains no parasites and a number of lymphocytes below 6 per cmm., and an amount of total albumin equal to 0·25 per cent. or less. Taking this standard the author formerly considered that if the cerebrospinal fluid remained normal for one year from the date of treatment the patient could be considered cured. He has now modified his opinion on account of a case studied by him, in which the cerebrospinal fluid was normal on July 20th, 1910, two years after the cessation of treatment, but on August 28th, 1912, that is to say four years after treatment, the cerebrospinal fluid was found to contain parasites and to show considerable lymphocytosis. The patient had never left the camp, and infection could not have occurred there as all patients were treated with atoxyl before admission and subsequently treated regularly, and further there are no species of Glossina in the environs of Stanleyville.

Of 1,100 cases treated a hundred left the camp apparently cured. On account of the difficulty in following cases up in view of the prolonged periods during which the cerebrospinal fluid may be normal and yet relapse occur, the author thinks the percentage of real cures must be very small indeed.

W. Y.

Laveran (A.) & Marullaz (M.). **Essais d'Immunisation contre le Nagana expérimental des Souris.**—*Bull. Soc. Path. Exot.* 1914. Jan. Vol. 7. No. 1. pp. 53-58.

The authors have repeated the experiments of Rondoni and Goretti, which showed that it was possible to immunise mice against nagana by means of living trypanosomes treated with weak solutions of salvarsan (see this *Bulletin* Vol. 2, p. 355).

Laveran and Marullaz worked with *T. brucei* (nagana ferox of Ehrlich); eight experiments were done, six mice being used in each.

The strength of the solutions of salvarsan used varied between 1 in 1,000 and 1 in 40,000. Details of four of the experiments are given. The results obtained differed notably from those of Rondoni and Goretti. Of the 48 mice treated not a single one exhibited any lasting immunity; 30 became infected after vaccination, and of the 18 which remained free 16 became infected upon subsequent inoculation of the active virus. The two animals which resisted the first inoculation of active virus succumbed to a second made shortly after the first.

The authors consider that slowing of the movements of the trypanosomes is no sufficient criterion of the action of salvarsan. Salvarsan in dilutions of 1 in 20,000 to 1 in 40,000 is useless for the preparation of vaccines with the strain nagana ferox. With dilutions of 1 in 5,000 to 1 in 10,000 there is a retarding of the incubation period, whilst with vaccines prepared with dilutions of 1 in 1,000 and 1 in 2,000 results are obtained which are analogous to those following the use of dead trypanosomes—the mice do not become infected but succumb on subsequent inoculation of virulent virus.

W. Y.

Delanoë (P.). **Des Variations du Pouvoir Infectieux et de la Virulence du *Trypan. dimorphon*, à partir d'Infections naturelles présentées par les Boeufs et les Moutons.**—*Bull. Soc. Path. Exot.* 1914. Jan. Vol. 7. No. 1. pp. 58-63. Note préliminaire.

During the second half of last year the author examined the blood of more than 3,000 cattle and sheep in various portions of Upper Senegal and Niger. The only trypanosomes encountered by him were *T. cazalboui*, *T. dimorphon* and *T. pecaudi*.

In this communication the author deals with the infectivity of the various strains of *T. dimorphon* isolated. Of the seven strains examined five—taken from 3 cattle and 2 sheep—were not inoculable at the first attempt in either rats or guineapigs, one strain infected rats but not guineapigs, whilst the seventh proved to be virulent for both animals. The negative results obtained in the case of the first five strains show that in certain cases the natural immunity of rats and guineapigs to *T. dimorphon* is complete. In the case of the sixth strain a rat and guineapig were inoculated. At the end of three months the guineapig had not become infected; the rat was in excellent condition and trypanosomes—very few in number—had only been found in its blood on the 21st and 81st days. It appears then that *T. dimorphon* may infect rats without producing in these animals any pathogenic condition. On the other hand the result of inoculation of the seventh strain indicates that *T. dimorphon* may at first inoculation infect both rats and guineapigs and produce in them an acute disease rapidly terminating in death.

No morphological distinction could be recognised between these various strains; they were all short aflagellar trypanosomes. In a future communication the author is to describe experiments in which it is shown that it is possible to render pathogenic to rats a strain of *T. dimorphon* which at first was not infective for these animals.

[This paper should be compared with that of Blacklock and Yorke

on the identity of *T. congolense* and *T. nanum.* (this *Bulletin* Vol. 3, p. 169)].

W. Y.

Laveran (A.). **L'Agent du Debab d'Algérie est le *Trypanosoma soudanense* (Laveran).**—*Compt. Rend. Acad. Sciences.* 1914. Jan. 12. Vol. 158. No. 2. pp. 93-96.

Prof. Laveran has made some experiments to establish the identity of *Trypanosoma soudanense* with that of debab of dromedaries. The virus of *T. soudanense* came originally from a dog inoculated at Ségou, Upper Niger from a dromedary and brought to France in 1906. It has since been maintained in guineapigs in Laveran's laboratory. The debab virus was sent by Ed. Sergent in a guineapig inoculated from a dromedary, nomad between Touggourt-Biskra and Oued-Athménia-Châteaudun. Experiments made with three goats are detailed. They show that a goat immune to *T. soudanense* is refractory to the virus of debab, while a control kid and a goat immune to surra, when inoculated with the virus of debab under the same conditions as the first goat, became infected. The trypanosome of debab is thus identified with *T. soudanense* and has no connection with *T. evansi.*

Former experiments made on two bovines at Alfort have shown that animals immune to debab are also refractory to *T. soudanense.* The demonstration of identity of the two viruses is thus considered complete.

The strain of *T. soudanense* in Laveran's laboratory was a little more active than the Algerian virus of debab, possibly explained by animals having immunity to debab having been infected previously by *T. soudanense.* Absolute cross-immunity experiments, i.e. done in both directions, must be insisted upon in order to avoid errors arising from this source.

H. B. Fantham.

Bayma (Theodoro). **Molestia de Carlos Chagas (Nota sobre sua verificaçao parasitologica no Homem, em S. Paulo.)** [Chagas's Disease. Note on the finding of the Parasites in Man in S. Paulo.] —*Revista Med. de S. Paulo.* 1914. Jan. 15. Vol. 17. No. 1. p. 3.

On the publication of the researches of Carlos Chagas into the disease which goes by his name, the workers at the pathological institute of San Paulo resolved to ascertain the possibility of its existence in the State of that name. Carriers of the parasite were soon found in three different species of Triatoma and the conviction gained ground that there must be foci of infection amongst human beings in the population as well, probably not of a very extensive character. Members of the staff of the institute were sent in different directions to investigate this problem, and the author of the present paper was successful in finding in the township of Ribeirao Preto a certain number of children presenting slight signs of hypertrophy of the thyroid gland. Though the symptoms were not marked and the majority of the children were

attending school and showed normal intelligence, the author was able to infect a guinea-pig from the blood of one of them, 5 to 10 cc. of blood being drawn from a vein for this purpose. After the lapse of 15 days, a small number of living trypanosomes were detected in the blood of the guinea-pig and from its heart's blood fresh inoculations were successfully made into other animals. The author was also successful in growing the parasite from the same blood after 48 hours upon blood-agar made from guinea-pig's blood, while agar made from the blood of rabbits and monkeys remained sterile.

J. B. N.

MALARIA.

VON EZDORF (R. H.). **Malarial Fevers. Prevalence and Geographic Distribution in Arkansas.**—*U.S. Public Health Rep.* 1914. Jan. 2. Vol. 29. No. 1. pp. 1-13. With 2 maps.

This report is issued in response to the rules and regulations adopted by the Arkansas State Board of Health, 1913. Ezdorf's study is based upon such mortality reports as could be collected under reply postal cards addressed to all physicians in the State, obviously a very unsatisfactory method of obtaining accurate information.

Replies were received from all 75 counties, in all of which malaria was said to occur. The month of the greatest incidence appears to be August with a decline during the next two months, the tertian to be the commonest form of the parasite, and *Anopheles maculipennis* to be the most prevalent anopheline mosquito.

P. H. Bahr.

PROPAGANDA ANTIMALARICA. 1913. Oct. 31. Vol. 6. No. 5. pp. 98-120; and Dec. 31. No. 6. pp. 121-160.

These two numbers contain the following original papers:—(i) CELLI: Malaria in Italy during 1911. Experimental and Prophylactic Researches. (ii) ROSSI: Results of an Enquiry into Malaria and the Rural Antimalarial Campaign in the Provinces of Benevento, Caserta and Salerno. (iii) CACACE: Report on Antimalarial Hygienic Measures in Schools, presented to the 7th Italian Pediatric Congress in Bologna and the 1st Congress on Italian School Hygiene in Milan. (iv) RUGE: Difficulties in Quinine Prophylaxis [see this *Bulletin*, Vol. 3, p. 56.] (v) CACACE: Education and Prophylactic Antimalarial Measures in Schools in Italy in 1912. (vi) IBBA: Malaria in the Municipality of Iglesia during 1913. (vii) TARASCONI: Antimalarial School Measures in Serramanna during 1911.

The papers are chiefly of local interest.

P. H. B.

ETTINGER (Witold). **Drei Fälle von Malaria mit ungewöhnlich schweren Symptomen.** [Three Cases of Malaria with Unusually Severe Symptoms.]—*Wien. Klin. Wochenschr.* 1914. Jan. 15. Vol. 27. No. 3. pp. 49-50.

A record of three benign tertian cases presenting certain features' such as icterus and diarrhoea. In two diagnosis was further complicated by the appearance of a rash; in one this was urticarial, affecting especially the eyes, nose and pharynx, in this respect resembling measles; in the other it was multiform and composed of papules, macules and blebs. In the third case the mental stupor, furred tongue and abdominal symptoms suggested a diagnosis of typhoid.

All the cases recovered under appropriate treatment. Ettinger believes the jaundice to be a "retention icterus," itself consequent on hepatic insufficiency and not of haemolytic origin, as he found the resistance of the red cells to dehaemoglobinization to be normal in the laboratory.

[Observations on the plasmodia and the blood cells which are recorded are of little value. The author does not specify what he means to imply by the discovery of " Plasma cells " in the blood. Laboratory tests on the resistance of the blood cells to dehaemoglobinization are quite unnecessary in view of the well known action of the plasmodium itself on these cells.]

P. H. B.

GOODHART (S. Philip). **Amnesias of Tobacco and of Malarial Origin. With Report of Two Cases.**—*Jl. Amer. Med. Assoc.* 1913. Dec. 27. Vol. 61. No. 26. pp. 2297-2301.

The author records a case of tobacco amnesia which he treated, and contrasts the pyschic condition with that of a case of malaria in a young woman as seen by another practitioner. In this case the tertian parasite was found during the acute attack, but for several days preceding the appearance of the parasite and the attack of fever the patient had suffered from mental confusion. The consequent amnesia was continued long after all malarial symptoms had disappeared. The confused mental state was of such marked character as to suggest typhoid to another practitioner. Goodhart discusses whether the pyschic symptoms in this case were directly due to the malarial toxins or to certain changes in the brain capillaries produced by the micro-organism itself.

[The patient, a young woman of twenty-seven, was, as the author admits, of a high-strung and nervous temperament; it therefore appears to the reviewer unwarrantable to suppose a thrombosis of the cerebral capillaries in her case, especially since such complications are more usually associated with the subtertian parasite.]

P.H.B.

GIEMSA (G.) & WERNER (H.). **Erfahrungen mit weiteren dem Chinin nahestehenden Alkaloiden und einigen ihrer Derivate bei Malaria (Chinidin, Hydrochinidin, Cinchonin, Hydrocinchonin, Cuprein, Chinäthylin und Chinpropylin).** [Experiences with Alkaloids allied to Quinine and with its Derivatives in Malaria.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1914. Jan. Vol. 18. No. 1. pp. 12-15.

1. Cuprein in doses of one gramme daily proved to be a good substitute for quinine, but the difficulty and the expense entailed in procuring it prevent its general adoption.

2. Cinchonin and Hydrocinchonin in doses of one gramme daily are practically inert in malaria.

3. Chinidin and Hydrochinidin proved at least equally as effective as quinine.

4. Chinäthylin exhibited quite extraordinary antimalarial properties.

Comparison of the hydrated alkaloids with the simple bases show that the antimalarial properties of the latter are not augmented by the addition of the hydroxyl group.

P. H. B.

Spagnolio (Giuseppe). **I Tannato di Chinino nella Malaria infantile.** [Quinine Tannate in Infantile Malaria.]—*Malaria e Malat. d. Paesi Caldi.* 1913. Oct.-Dec. Vol. 4. No. 6-7-8. pp. 367-368.

Spagnolio finds that in Messina the administration of quinine tannate to children in place of euquinine has several obvious advantages; it is cheaper, better borne, and more efficacious in the prevention of relapses.

P. H. B.

Baetge (P.). **Behandlung der Malaria tertiana mit Neosalvarsan.** [Treatment of Tertian Malaria with Neosalvarsan.]—*München. Med. Wochenschr.* 1913. Dec. 16. Vol. 60. No. 50. pp. 2776-2778.

A record of four cases of benign tertian malaria treated successfully with ·9 gm. intravenous injections of neosalvarsan. No further relapses occurred whilst the patients remained under observation.

P. H. B.

Werner (H.). **Malariarückfälle nach Salvarsanbehandlug.** [Malaria Relapses after Treatment with Salvarsan].—*Arch. f. Schiffs- u. Trop. Hyg.* 1914. Jan. Vol. 18. No. 2. pp. 63-64.

A criticism of Summa's paper reviewed in this *Bulletin* (Vol. 3. p. 148). Werner believes that salvarsan only extirpates malarial infection when given during the acute phase, whereas in the relapses recorded by Summa it was injected during the latent period of infection when no malaria parasites were present in the blood. He concludes that a combined quinine and salvarsan therapy promises well.

P. H. B.

Deppe (L.). **Intravenöse Sublimatinjektionen bei tropischer Malaria mit latenter Sepsis.** [Intravenous Injections of Perchloride of Mercury in Malaria with Latent Sepsis.]—*Arch. f. Schiffs- u. Trop. Hyg.* 1914. Vol. 18. No. 2. pp. 51-53.

In spite of the prolonged use of quinine the temperature of a case of subtertian malaria did not become normal even though the parasites had completely disappeared from the blood. A latent septic focus was therefore suspected, and Bacelli's sublimate injection, composed of ·01 gramme perchloride of mercury in ten parts normal saline, was injected intravenously. This proved efficient. The patient's temperature soon became normal, but one would feel chary in recommending a more extended use of a remedy producing 73 stools in a period of a week!!

P. H. B.

Cartolari (Enrico). **Splenectomia per Milza Malarica, Ipermegalica ed Ectopica.** [Excision of the Hypertrophied and Displaced Spleen in Malaria.]—*Gazz. d. Ospedali e Cliniche.* 1913. Nov. 9. Vol. 34. No. 134. pp. 1399-1402.

A record of the successful removal of a hypertrophied spleen in malaria. The condition of the blood, as evidenced by the rise in haemoglobin and the number of red cells, was much improved by the

operation. There was little change in the character of the differential leucocytic count or in the total number of leucocytes. Apparently further relapses were not prevented by the operation.

P. H. B.

Bertarelli (Ernesto). **Wenig erörterte Fragen aus dem Gebiete des Malariaschutzes und der Lehre von der Malaria.** [Some little discussed Problems on Malaria and its Prevention.]—*Centralbl. f. Bakt.* 1. Abt. Referate. 1914. Jan. 31. Vol. 60. No. 10. pp. 289-297.

The first problem Bertarelli considers is the question of quinine prophylaxis. Is it better to put the whole population in a malarious district under such a prophylaxis or only that portion of the community harbouring gametes in their blood? He thinks that neither method is feasible, but proposes a compulsory quinine prophylaxis of all who have suffered from fever in the previous three years.

Direct experimental proof of the destruction of the sporozoites by quinine is yet lacking, but the author cites the case of Verona as showing that the general distribution of quinine to sick and healthy alike prevents infection in previously non-infected persons.

Mosquito destruction is the second problem considered. The author suggests an organized attempt to destroy hibernating mosquitoes, as constituting a much more practical measure than the destruction of larvae.

The third problem the author has set himself is whether the malaria parasite exists in other mammals than man, which would account for the difficulty of its eradication in certain districts. Carazzi has stated that, although malaria spreads with great rapidity in rural areas, it does not do so in towns and suggests that the bat constitutes the reservoir host, even in spite of much experimental evidence to the contrary.

P. H. B.

Ross (Ronald), Christophers (S. R.) & Perry (E. L.). **The Spleen Rate in London School Children.**—*Indian Jl. Med. Research.* 1914. Jan. Vol. 1. No. 3. pp. 385-387.

The spleen rate has by universal consent been accepted as the most readily applied measure of the amount of malaria in a community.

Ross in his recent work in Cyprus had suspected that many spleens are " just palpable " in subjects not affected by malaria. The authors determined to set the matter at rest by examining 500 London school children mostly between the ages of three and ten years. The spleen rate was found to be about 1 per cent.

The best method to ensure complete abdominal relaxation is for the observer to be seated, while the child, standing between his knees, leans slightly forward over his knee, at the same time looking upward. The observer's hand can thus be easily passed under the left costal arch. The gist of these observations is that no large error due to the palpation of the normal spleen has to be considered.

P. H. B.

WATSON (Malcolm). **The Prevention of Malaria.**—*Glasgow Med. Jl.* 1914. Feb. Vol. 81. No. 2. pp. 81-88.

This, though less technical than the author's paper in the *Transactions of the Society of Tropical Medicine and Hygiene*, already reviewed (see this *Bulletin* Vol. 3, p. 153) practically traverses the same ground and relates the now familiar history of our modern knowledge of malaria.

[The reviewer may be excused, without in the least degree wishing to minimise the importance of ROSS's discovery, if he points out that the author is a little ungenerous in his estimate of MANSON'S work. No one can assert that MANSON'S mosquito-malaria theory was *not correct*; it stipulated for the completion of the life-history of the plasmodium in the mosquito, not the exact manner in which it was conveyed by the mosquito from man to man.]

P. H. B.

ZIEMANN (H.). **Weiteres über die Züchtung der Malariaparasiten und der Piroplasmen (*Piroplasma canis*) in vitro.** [Further Studies on the Cultivation of Malaria Parasites and Piroplasms *in vitro*.] —*Arch. f. Schiffs- u. Trop. Hyg.* 1914. Feb. Vol. 18. No. 3. pp. 77-93. With 1 curve.

The conclusions of this paper may be briefly stated as follows:—

1. No propagation of the parasite takes place in dextrose-free cultures.

2. Multiplication of the parasites proceeds less slowly than in the peripheral blood.

3. Degeneration forms can be found in cultures and resemble those occasionally found in the peripheral blood. Schüffner's dots are produced in the corpuscle by the growth of the benign tertian and Maurer's dots by the subtertian parasite in culture.

4. In accordance with the well-known proclivity to spontaneous recovery in subjects of malarial infection, the parasites tend to die out in some cultures.

[The results do not differ materially from those obtained by other workers on the subject.]

P. H. B.

BLACKWATER FEVER.

BARRATT (J. O. Wakelin) & YORKE (Warrington). **The Production of General Symptoms in Haemoglobinaemia.**—*Brit. Med. Jl.* 1914. Jan. 31. pp. 235-238. With 3 text figs.

The authors advance further evidence in support of the conclusions arrived at from their previous work on the same subject.

Intravenous injection of red cell stromata into rabbits rapidly causes convulsive symptoms and death, whereas a haemoglobin extract seldom gives rise to such symptoms.

The injection of cell stromata results in a delayed coagulability of the blood. This alteration, taken in conjunction with the fact that red cell stromata *in vitro* and in the presence of calcium chloride also act as a coagulant, suggests that the symptoms so produced may be due to the intravascular separation of fibrin, a supposition subsequently borne out in some cases by microscopical examination.

It is not possible to attribute the general symptoms attending injection of red cell stromata to a purely mechanical effect brought about by intravascular production of fibrin, for the amounts so produced are very small, and fibrin cannot be detected in every case of death following injection. Other appearances such as the irregular particles of stromata in the solution used for the injection and the flocculent precipitate caused by the addition of normal saline to such a solution, suggests that the lethal effect is produced by a mechanical obstruction of the pulmonary vessels.

The alternative hypothesis is that the symptoms are toxic in character, due to substances dissolved out of the stromata before injection.

Neither of these hypothesis appears to furnish a satisfactory explanation of the occasional appearance of acute symptoms following upon the injection of solution free from stromata.

P. H. B.

BRUCE-PORTER (H. E. B.). **Intravenous Injections in Blackwater Fever.**—*Practitioner.* 1914. Feb. Vol. 92. No. 2. (No. 548). pp. 261-265. With 2 curves.

A record of a typical case of blackwater fever occurring in an army officer on leave from the West Coast of Africa, and treated successfully by the now well-recognized method of intravenous injections of normal saline and copious saline enemata. The patient had been previously free from malarial attacks for three years, and had no mononuclear leucocytosis. There was no splenic enlargement and no malaria parasites were found in the blood. Quinine, of which only grs. x had been taken after commencement of the attack, could not be regarded as a predisposing factor. The author, apparently on very little evidence, connects the development of the disease with the bite of a tsetse fly received some months previously.

P. H. B.

INSECT TRANSMITTERS OF DISEASE.

Simpson (Jas. J.). **Entomological Research in British West Africa. IV. Sierra Leone.**—*Bull. Entomol. Research.* 1913. Nov. Vol. 4. Pt. 3. pp. 151-190. With 5 plates and a map.

This is the fourth of a series of studies of blood-sucking insects in Tropical Africa; the others dealt with the Gambia, Northern Nigeria and Southern Nigeria. The author's visit was paid in March to November 1912. An account is given of the geography of the Colony and Protectorate, the area of which is approximately 32,000 square miles. At Freetown there are several hundred European troops and here native crews are taken up on the outward voyage and dropped on the homeward. There is frequent transport of troops between this port and the West Indies. These data show the importance of Freetown.

In the account of the vegetation the various zones of afforestation are described; it is noted that *G. palpalis* is found chiefly in mangrove forest, fresh-water swamp forest and forest fringing rivers, whereas *G. longipalpis* is restricted to savannah forest, and *G. fusca* to tropical rain forest. Charts are given of temperature, humidity and rainfall. The wet season lasts from May to October; the harmattan blows from December to March. The bulk of the paper is taken up by the account of the author's travels, illustrated by a map. Only a few points of interest can be noted. The author writes of Daru, the head-quarters of the Sierra Leone Battalion.—

"Larvae were found in various water-filled depressions in the soil, in hollows in trees, in the receptacle formed by the bases of the leaves of pine-apples, in canoes at the river-side, in pools in the concrete floor of the verandahs of unoccupied houses, and in the bamboo fencing around the gardens kept by the native soldiers. The last-named of these was the most important. Bamboos were used for fencing purposes and no attention was paid to where these were cut; so that in nearly every pole several inches of the terminal internode formed a receptacle for water. In every one of these examined, larvae were found, and in almost every case *S. fasciata* and *S. apicoargentea* were bred out."

At another place larvae of *S. sugens* were found in rock pools at least five miles from a habitation and on a not very frequented road. At Freetown Stegomyia were found, among other places, in the water kept in the barrels used in the blacksmith's shop for cooling red-hot iron. The rôle played by trains in transferring insects from one place to another is illustrated by the fact that since the making of the railway tsetse have appeared in Accra which was previously free. A list is given of the blood-sucking insects and other arthropods found in Sierra Leone and a vocabulary of the native names; the tsetse is known as "folloi" or the "softly-softly biter."

The author writes that practically nothing is known with regard to the species of mosquitoes which transmit malaria in Sierra Leone. [Readers may consult the Report of the visit of Ross, Annett, and Austen to Sierra Leone.* Out of 109 *A. costalis* examined at Freetown the parasites of all three species of human malaria were found in 27. One species, or perhaps two, were found in *A. funestus*.]

* Report of the Malaria Expedition to West Africa, Aug. 1899. *Memoir 2 of the Liverpool School of Tropical Medicine.*

Of sleeping sickness he says—Only one diagnosed case of this disease has been recorded. [He is apparently unaware of the observations of Captain GRATTAN in 1905.* This observer diagnosed 18 cases in Sierra Leone by gland puncture.] Trypanosomiasis of stock, the author writes, is very prevalent but does not seem to cause a heavy mortality. Cattle are found all over the Protectorate and in most places look exceedingly healthy, though *G. palpalis* is widely distributed and *G. longipalpis* is abundant in one district. The genus *Stegomyia* and especially the species *fasciata* occurs at widely separated localities.

Photographs illustrate the native cattle (long horned with no hump), and nature of country and of vegetation.

A. G. B.

HONG KONG. **Report on Special Investigations carried out in the Bacteriological Institute and in the Public Mortuary, Victoria, During the Six Months, January 1st to June 30th, 1913.**—Received in Colonial Office 29 September, 1913.

An interesting fact is brought out in this Report, viz. that the predominating mosquito of Hong Kong is *Stegomyia scutellaris* and not *S. fasciata*, of which one specimen only was found. The former would appear to be the common mosquito of the houses and back-yards of the city of Victoria. *Stegomyia fasciata* is common in the ports of Java and, as there is constant steamship communication between these and Hong Kong, its failure to establish itself in the latter town is interesting. Similarly in Canton CHAN TSUN KUN has examined over 5000 specimens of mosquitoes with a negative result, as regards *Stegomyia fasciata*. The author of the Report is unable to offer any explanation.

G. C. Low.

LEGENDRE (J.). **Note sur les Stegomyias du Tonkin.**—*Bull. Soc. Path. Exot.* 1913. July. Vol. 6. No. 7. pp. 511-513.

The habits of the Tonkin Stegomyias are the same as those of these mosquitoes in Africa and America. They live and shelter in the immediate vicinity of man, in and about his gardens and houses. In the Botanical Garden of Hanoi the larvae and pupae of a Stegomyia [species ?] have also been found in a small hollow situated at the junction of two branches of a tree. [It is not stated in the paper what species the Stegomyia described belong to, this rendering the observations of little value.]

G. C. L.

DRAKE-BROCKMAN (R. E.). **Some Notes on *Stegomyia fasciata* in the Coast Towns of British Somaliland.**—*Jl. London School of Trop. Med.* 1913. Nov. Vol. 2. Pt. 3. pp. 166-169.

Some facts relating to the development of *Stegomyia fasciata* in Somaliland are given. [These do not differ materially from those

**Jl. R. Army Med. Corps.* 1906. Nov. Vol. 7. p. 485.*

which obtain in other parts of the world.] The larvae emerge from the eggs under favourable conditions in from two to three days and pupate in four or five days, though if food is scarce the larval stage may last for three weeks or more. [Four days is a very rapid development even in the presence of abundant food].

Two tables are given, one of a series of experiments conducted with a view to ascertain the length of life of *S. fasciata* when unfed, fed on dates, and lastly on human blood; the second, the time occupied by the different stages in the life history.

G. C. L.

Legendre (J.). **Destruction des Culicines à l'Aide du Gîte-piège.**—*Bull. Soc. Path. Exot.* 1913. July. Vol. 6. No. 7. pp. 513-514.

The author refers to a paper by himself,* in which he recommended the destruction of mosquitoes by collecting their eggs from water surfaces specially suitable for them to breed upon. He now gives a table showing the numbers of egg rafts of culex collected from a number of natural sites of this nature, the figures showing that the method is a valuable one for the reduction of domestic mosquitoes. [More might be done on similar lines in and about houses in the Tropics].

G. C. L.

Balfour (Andrew). **Ants as Transmitters of Tropical Diseases.** [Correspondence.]—*Lancet.* 1914. Jan. 17. pp. 212.

Reference is made to the work of Bates on the mechanical transmission of *B. typhosus* and *B. dysenteriae* by a species of large ant in the Canal Zone. The author points out that it was Darling who redirected attention to this question. He then goes on to narrate an interesting observation of his own made in the Sudan. A species of ant there has a great liking for urine, both fluid and dried up. Possibly the urea attracts them. These ants haunt chamber pots and quite possibly might transmit *Micrococcus melitensis* or *B. typhosus* occurring there to food such as milk or cheese. This probably does not often occur, but the possibility should be borne in mind.

G. C. L.

King (W. V.). **Note on the Mounting of Mosquito Larvae.**—*Amer. Jl. Trop. Diseases & Preventive Med.* 1913. Nov. Vol. 1. No. 5. p. 403.

For killing, hardening and clearing the larvae a solution of equal parts of pure carbolic acid crystals and absolute alcohol is used. Living larvae are placed in a small dish or upon an ordinary slide, excess of water being removed with blotting paper, and then a few drops of the solution are poured upon them. After fifteen to thirty minutes the specimens are ready for mounting, the medium employed being turpentine colophonium. If the larvae have been treated in

* *Bull. Soc. Path. Exot.* 1910. Vol. 3. No. 7. p. 455.

a dish, they are removed to the slide with a pipette which has a fair sized opening, as much of the carbol-alcohol as possible is removed and they are then mounted under a cover slip in the usual manner. The colophonium medium is better than xylol balsam. It is prepared by dissolving small lumps of pale colophonium in rectified oil of turpentine.

The author claims that, by his method, the handling of the specimen is reduced to a minimum, the chitinous parts are cleared sufficiently for examination, and little or no shrinkage takes place in the soft parts of the body or even in such delicate structures as the anal gills. After mounting, the slide should be examined occasionally for several weeks to remedy any shrinkage of the medium which may take place. The author believes that soft bodied arthropods, of which the chitinous parts are to be studied, may be dealt with in a similar manner.

G. C. L.

SNAKE-BITE.

Reinhold (C. H.). **Case of Snake-Bite.** [Correspondence.]—*Indian Med. Gaz.* 1913. Oct. Vol. 48. No. 10. p. 413.

A case of snake-bite successfully treated with permanganate of potash and ligature.

A woman sleeping on a verandah was bitten on the index finger of the right hand by a krait, which was killed immediately after and subsequently identified by the author. In less than five minutes he incised the wound, rubbed in potassium permanganate crystals and applied two ligatures, one at the root of the finger and another on the wrist. The accident having occurred at night the ligatures were not removed till morning, the patient in the meanwhile suffering a good deal of local pain but with no general symptoms. After the ligatures were removed no further symptoms occurred, and the patient five days afterwards was convalescent with nothing worse than a sloughing wound of the finger.

The author writes that it is impossible to say what would have been the sequel if no treatment had been given, but knowing the virulence of krait venom, and that the specimen killed was three feet seven inches long, he infers that the result would have been serious if not fatal.

G. C. L.

White (P. Carr). **A Case of Cobra Poisoning: Recovery.**—*Indian Med. Gaz.* 1913. Nov. Vol. 48. No. 11. pp. 430-431.

A man aged about 30 was bitten on the back of the forearm by a snake which was caught and identified as a cobra. A bystander instantly applied a very tight ligature to the upper arm and made many free incisions with a sharp razor through the fang marks, which bled copiously. Medical aid arrived one and half hours after the bite, powdered permanganate of potash being then rubbed in. Two hours after the bite, the patient complained so much of the pain caused by the tight ligature that it had to be removed. There were then no symptoms of cobra poisoning. The author believes that the free bleeding caused by the incisions washed out the cobra venom and so saved the man's life.

G. C. L.

Wall (F.). **Treatment of Snake Poisoning.**—*Indian Med. Gaz.* 1913. Nov. Vol. 48. No. 11. pp. 428-430.

The cardinal signs of a snake-poisoned wound are said to be (1) Pain of a burning or stinging character; (2) Swelling; (3) Discharge of blood or bloody serum, the discharge being thin and persisting for many hours. These three signs are usually associated, but the presence of any one of them should leave no doubt as to the injection of venom. The absence of all three justifies the conclusion that the wounds have not been poisoned. The treatment of snake poisoning may be discussed under the following heads:—

(1) Preventive, including (a) medicinal and (b) mechanical.
(2) Antidotal, *i.e.*, Antivenene.
(3) Symptomatic, including drugs that operate on (1) the nervous

system such as ammonia, strychnia, and alcohol and (2) on the circulatory system and blood such as calcium, adrenalin, and pituitrin.

(4) Local, *i.e.*, antisepsis.

As regards drugs various chemical agents such as permanganate of potash, hypochlorite of lime, chloride of gold, nitrate of silver, etc. are known to render snake venom of all kinds innocuous when mixed *in vitro*, but unfortunately *in vivo* it is most difficult to bring any of these agents into chemical relationship with the snake venom, which is locked up tenaciously in the living tissue cells. To achieve the best results, one should bring as large as possible a surface of the poison bearing tissue into relationship with the salt, either by free excision, or by closely set parallel incisions through the swollen tissues. There is no reason to suppose that any drug will prove more satisfactory than potassium permanganate.

As regards antidotal treatment success depends upon :—(1) The freshness of the preparation. It loses 5 to 10 per cent. of its virtue in the first year, and probably more subsequently. (2) The time that has elapsed since the casualty. The shorter the time, the better the chances of success. (3) The method adopted. The intravenous method is the more rapid, and its effects are more pronounced than those of the intramuscular. After paralytic symptoms have appeared this method is imperative. (4) The dose employed. The initial dose should be 100 cc., and this should be repeated at intervals of quarter of an hour so long as symptoms show a " crescendo " movement.

For symptomatic treatment ammonia and alcohol have been employed and, more recently, drugs acting upon the circulatory system such as calcium, adrenalin and pituitrin. The first of these can be given internally in 1 drachm doses every four hours, but its best effects are to be obtained by hypodermic injection of half drachm doses. From experiments recently conducted in Copenhagen on tadpoles it would appear that calcium actually reduces the toxicity of cobra venom. Adrenalin is best administered hypodermically in doses of 10 minims of a 1/1000 solution. Pituitrin also is given hypodermically, the dose being 18 minims. Combinations of these may also be employed.

In every case of snake poisoning syncope is to be expected. It should be looked for and promptly treated ; otherwise even anti-venene will not save the subject bitten by cobras and daboias, and the other measures recommended will prove unsuccessful. Wounds however trivial should always receive attention ; they are to be laid open and, whether potassium permanganate has been employed or not, should be antiseptically dressed.

G. C. L.

Day (E. C.). **Report of an Instructive Case of Snake-Bite.**—*Jl. Amer. Med. Assoc.* 1913. Nov. 8. Vol. 61. No. 19. p. 1718.

The patient, a mulatto, aged six, was seen within two minutes of being bitten on the back of the second phalanx of the right middle toe by a " ground-rattler " of the genus *Sistrurus*, family *Crotalidae*. An Esmarch bandage was at once applied around the right thigh, the toe was freely incised with ten incisions, and a large compress of boric acid was applied to the ower half of the foot. Two hours

after the patient vomited. Six hours later the boric pack was removed and the tourniquet taken off. The outer side of the foot was then seen to be slightly swollen and the fourth toe, next to the incised one, was about three times its normal size, was dark in colour, and on its inner aspect presented a circular patch of blue skin, this covering a portion of completely digested tissue. Apparently the snake had struck twice, having bitten the fourth toe first. There were no constitutional effects and no ecchymoses appeared.

[The author does not state the poisonous capacity of the "ground-rattler." One would have thought that a poisonous snake, biting so severely as this one did, would have produced more severe local and general symptoms.]

G. C. L.

Jackson (R. W. H.). **A Case of Snake-Bite.**—*Jl. R. Army Med. Corps.* 1913. Dec. Vol. 21. No. 6. pp. 694-695. With 1 fig.

The patient, a gunner at a battery near Weymouth, was struck by a brown adder on the right thumb, June 30th, 1913. An hour later all the symptoms of acute collapse—slow, sighing, irregular respiration, weak, quick, irregular pulse, temperature 95° F., pallid sweating skin were present. The hand and forearm were much swollen and intense pains in the upper arm and axilla were complained of. The limb had been tightly bandaged at the wrist, at the elbow, and above at the middle of the upper arm.

Twenty minims of a strong solution of potassium permanganate were injected where the fangs had penetrated and three drams of aromatic spirits of ammonia were given by the mouth.

As the bandages were loosened the symptoms became very urgent, but gradually these subsided and recovery was uneventful, the patient being discharged from hospital on July 24th.

G. C. L.

Stevenson (W. D. H.). **The Preparation of an Antivenomous Serum for the *Echis carinata* or Phoorsa with Notes on the Toxicity and Haemolysing Power of the Venom.**—*Indian Jl. Med. Research.* 1913. Oct. Vol. 1. No. 2. pp. 310-325.

The author states that according to Noguchi eight specific anti-venomous sera have so far been prepared. The list given does not include an *Echis carinata* antivenene, nor does the polyvalent serum now prepared at the Central Research Institute, Kasauli, India, though potent against cobra and the *Daboia russelli*, have any effect on the venom of this snake. As however it is the commonest poisonous snake in India and undoubtedly has caused deaths, the Government of Bombay considered it advisable that an attempt should be made to prepare a curative serum. This is not an easy matter on account of the difficulty of obtaining vipers of sufficient size.

Morison who first undertook the experiment immunised a sheep by means of intravenous injections, the animal receiving as its final dose 166 milligrammes of venom. The animal eventually died but a small quantity of its serum was obtained and tested (Serum of sheep A). A second sheep was immunised by Stevenson and its serum (Serum of sheep B) was examined three times, (1) seven days after the animal

had received 100 milligrammes of venom subcutaneously in a single dose, (2) seven days after it had received 645 milligrammes subcutaneously in a single dose and (3) eight days after it had received 1,000 milligrammes subcutaneously in a single dose.

After intravenous injection of toxic doses of the venom the symptoms leading to death are immediate and death is produced by intravascular clotting as Lamb and Hanna found in the case of Daboia poisoning. A series of experiments with the serum of sheep A and sheep B is given. It is finally pointed out that *in vivo* the haemolytic action of *Echis* venom is negligible, unless injected intravenously in large quantities. Fraser and Gunn have drawn attention to the fact that with even two minimum lethal doses there may be no haemolysis of corpuscles in the circulating blood, though with much smaller doses there is usually complete haemolysis at the site of injection, and they state that haemorrhagic discharges from the alimentary canal, etc., consist largely of unhaemolysed corpuscles. The author's conclusions are as follows :—

(1) The minimum lethal dose of *Echis carinata* venom administered subcutaneously to a guinea-pig may be taken as ·0045 grammes per kilogramme weight.

(2) *Echis carinata* venom, given intravenously to rabbits, is lethal in doses of ·00005 grammes per kilogramme weight.

(3) An antivenomous serum has been prepared with *Echis carinata* venom of which 1·5 c.c. neutralises *in vitro* 50 minimum lethal doses of venom.

(4) The haemolysins present in 0·2 milligrammes of *Echis* venom are neutralised by 0·5 c.c. of the antivenomous serum.

(5) There is evidence of the presence of a small amount of neurotoxin in the venom of *Echis carinata.*

G. C. L.

Acton (Hugh W.) & Knowles (R.). **A New Method of obtaining a Viperine Antiserum.**—*Indian Jl. Med. Research.* 1913. Oct. Vol. 1. No. 2. pp. 326-335.

The subcutaneous inoculation of pure venom into animals in sub-minimal lethal doses invariably gives rise to marked local reaction and, at the same time, causes some constitutional disturbance. From this it results that the doses can only be increased little by little, and that a rapid increase of dose gives rise to either death or severe wasting of the animal's tissues. To obviate this, various experimenters have tried the effect of (1) chemical reagents, and (2) heat, to modify the toxicity of pure venom.

The authors have attempted to secure fixation of the haemorrhagin by adding cells obtained from the lung tissue of healthy rabbits. The result of this has been that the injections of these mixtures have no longer given rise to local gangrene and its concomitant sepsis, whilst, at the same time, the authors have been able to immunise rapidly their animals to as high a titre as has been previously obtained.

The technique employed was as follows :—

One sheep and four goats were selected for immunisation and were weighed. The lungs of a rabbit, freed from all fibrous and tough tissue around the bronchi, were weighed and minced up in a sterile mortar with a scalpel and forceps into fine fragments. They were then pounded into a jelly with a sterile pestle. Normal saline solution was then added in

gradually increasing volumes until a 10 per cent. emulsion by weight of lung tissue was obtained. The solution was twice filtered through coarse muslin in the process.

The Daboia venom for injection was then weighed and dissolved in normal saline solution. For the first five injections, a solution of which 1 c.c.=2 mgms. was used. For the second five injections the strength of the solution used was 1 c.c.=12 mgms.

The venom solution was then mixed with the 10 per cent. lung emulsion in a sterile flask. For the first five injections for every 1 mgm. of venom used 2 c.c. of long emulsion was added. At the next two injections, 1 c.c. of the 10 per cent. lung emulsion was added to every 1 mgm. of venom. For the last three injections for every 1 mgm. of venom ·5 c.c. of lung emulsion was added. The mixture was then allowed to stand for three hours in the ice chest, and the injections were given the same afternoon.

The animals, with one exception, a goat, stood the injections well. The only local effect of the injections was some slight thickening of the subcutaneous tissues at the site of injection. Constitutional reactions were negligible. Sepsis and local gangrene were markedly absent.

A series of tables give full details of the methods used, the results of the testing of the antivenene ene and its standardization.

The conclusion reached is that the method "appears to provide a rapid and ready way of immunising animals against a viperine venom" and to be one devoid of many of the disadvantages of previous methods.

G. C. L.

Acton (Hugh W.) & Knowles (R.). **The Dose of Venom given in Nature by a Cobra at a Single Bite.**—*Indian Jl. Med. Research.* 1914. Jan. Vol. 1. No. 3. pp. 388-413. With 3 charts.

The following are the author's conclusions :—

"1. The average total venom yielded by an adult, healthy cobra of about 4 feet in length, is equivalent to 272 mgms. of dessicated venom.

"2. The amount which such a cobra injects at a good bite is about 172 mgms.

"3. The residual venom left in the glands after a good bite is about 127 mgms.

"4. From the above conclusions 1 and 2, it follows that a cobra gives, as a rule, as its bite about ten-sixteenths of the total amount of venom in its glands.

"5. Any antidote for cobra bite must be of such a nature that it will neutralize at least 172 mgms. of dessicated venom, half an hour after this dose has been inoculated into the system.

"6. The chances of recovery amongst human beings badly bitten by fresh cobras with full glands are from 3 to 4 per cent., and may become much higher under the circumstances which attend many actual cases of cobra bite."

G. C. L.

Acton (Hugh W.) & Knowles (R.). **The Dose of Venom given in Nature by the *Echis carinata* at a Single Bite.**—*Indian Jl. Med. Research.* 1914. Jan. Vol. 1. No. 3. pp. 414-424. With 2 charts.

The authors, continuing their study upon the bites of poisonous snakes, found as regards the *Echis carinata* :—

"1. The average total venom yielded by an adult fresh Echis of 13½ inches is equivalent to 18·8 mgms. of dried venom.

"2. The amount given at a good bite is about 13·3 mgms.

"3. From the above results it follows that an Echis gives at its first bite about ten-fourteenths of the total venom in its glands; a fraction which agrees fairly well with the ten-sixteenths obtained for the cobra.

"4. There is every prospect that an Echis antivenene of even low potency will almost eliminate the mortality from Echis bite.

"5. As it is, however, even without such an antivenene, the chances of recovery after being badly bitten by an Echis with full glands are about 40 per cent.; and, if other factors are present which would occur in nature but which were absent from our experiments, the chances of recovery may be even higher."

G. C. L.

Barratt (J. O. Wakelin). **The Nature of the Coagulant of the Venom of *Echis carinatus*, a Small Indian Viper.**—*Proc. Roy. Soc.* 1913. Oct. 16. Vol. B, 87. No. B 593. pp. 177-190.

In the course of the paper the different action exerted by thrombin and thrombokinase upon circulating blood plasma is described. With a view to throwing additional light upon the problem whether the coagulant action of the viper venom is due to either of these bodies, the action of heated and unheated venom upon circulating blood plasma was investigated. The final conclusions reached are that the coagulant of viper (*Echis carinatus*) venom, as exhibited by its effect in causing intravascular separation of fibrin when injected into the blood stream, and also as indicated by its behaviour when heated, is a thrombin and not a thrombokinase.

G. C. L.

Andrews (W. Horner). **Experiments with Snakes.**—*Union of S. Africa. Dept. of Agriculture. Second Report of the Director of Veterinary Research.* 1912. Oct. pp. 406-483. [1913. Cape Town: Cape Times, Ltd., Govt. Printers.]

The author began collecting snakes in 1911 for the purpose of studying the effects of their bites on the various domesticated animals. They were allowed to bite the experimental animals freely. In some instances it was necessary to irritate them while in other cases all attempts to induce biting proved unavailing. The bitten animal was placed in a loose box and free from all restraint as far as possible. It was observed at short intervals or watched continuously, and all the symptoms were recorded at the time of the observation.

The following is a list of the common South African snakes tested :—

Colubridae.—(1) *Aglypha.—Ablabophis rufulus* (Brown Water Snake). *Lamprophis aurora* (the Night Snake). *Boodon lineatus* (the House Snake). *Simocephalus capensis* (three-cornered Snake). *Dasypeltis scabra* (Egg-eater).

(2) *Opisthoglypha.—Tarbophis semiannulatus* (Tiger Snake). *Leptodira hotamboeia* (Herald Snake). *Trimerorhinus rhombeatus* (Schaapsteker). *Trimerorhinus tritaeniatus* (Schaapsteker). *Psammophis furcatus* (a Sand Snake). *Dispholidus typus* (the Boomslang).

(3) *Proteroglypha.—Naia haie* (Egyptian Cobra). *Naia flava* (Yellow Cobra). *Sepedon haemachates* (Ringhals).

Viperidae.—Bitis arietans (Puff Adder). *Causus rhombeatus* (Night Adder).

Lists of the experiments with their results are recorded. The *Dispholidus typus* (the Boomslang) was found capable of delivering a fatal bite to horses, mules, sheep and baboons. The venom is comparatively slow in its action and there may be a prolonged incubation period during which the bitten animal appears to be quite normal. The chief action of the venom is apparently exerted on the vascular endothelium with the consequent causation of numerous small haemorrhages. Experiments with the *Naia haie* (Egyptian Cobra) showed that of eight animals bitten four died, three recovered, and one did not receive sufficient venom to cause any noticeable ill health.

Living snakes of the species *Naia flava* (Cape or Yellow Cobra), which is confined to Cape Colony and German South West Africa, were procured through the kindness of Mr. Fitzsimons of the Port Elizabeth Museum. They were allowed to bite a horse, a mule and two sheep and in every instance the case terminated fatally.

Experiments were also conducted with the *Viperidae*. Of the ten species of this family recorded from different parts of South Africa only two species, *Bitis arietans* and *Causus rhombeatus*, were available for experiment. The former were allowed to bite a horse, a mule, a donkey, three sheep and a dog, and of these seven animals only the mule recovered.

Specimens of the Night Adder were procured from Mr. Fitzsimons and were allowed to bite one horse, which developed a slight local reaction only, two sheep, of which one died and the other recovered, and one dog which recovered.

Bitis arietans is evidently highly dangerous to equines, sheep and dogs; the absolute toxicity of the venom may possibly prove not to be very high as compared with that of some other species, but the poison glands are well developed and the volume of venom available for ejection is generally very considerable.

Causus rhombeatus is popularly considered to be extremely venomous, but this view is not supported by the experiments recorded. Out of four cases only one death occurred. Fitzsimons, as a result of biting experiments on rabbits and fowls, has also concluded that this species is not very dangerous to life.

[Those interested in the subject should consult the original and also Fitzsimons' book on the snakes of South Africa, an abstract of which was given in this *Bulletin* Vol. 1, p. 412.]

G. C. L.

MYIASIS.

Rieley (S. D.) & Howlett (F. M.). **A Few Observations on Myiasis (Screw-Worm Disease) in Behar.** —*Indian Med. Gaz.* 1914. Jan. Vol. 49. No. 1. pp. 8-10. With 1 temperature chart.

A form of myiasis due to a blue-bottle fly, *Pycnosoma*, is described. This fly deposits its larvae in slight abrasions or on the unbroken mucous membrane of the nasal fossa of the patient. The larvae burrow into the delicate membrane and feed on the underlying structures, causing considerable destruction of tissue with occasionally severe constitutional symptoms. The patient has a characteristic appearance. The upper portion of the face is oedematous, the oedema being localised chiefly to the nose, eyes, lower part of the forehead and upper lip. The voice is described as nasal and breathing is mostly through the mouth. The patient complains of an intense burning and gnawing pain in the affected parts. There is severe frontal headache and a rise of temperature to 100° or 103° F.

A local examination shows the mucous membrane of the nose to be congested, swollen and deeply ulcerated, and clinging to this larvae more or less fully developed may be seen. From the bases of the ulcers sinuses lead in various directions into the underlying tissues. A sanious foul-smelling discharge dribbles away from the nose or may flow into the mouth and be expectorated by the patient. The larvae may pass up the nasal duct and emerge through the conjunctiva, or attack the frontal bone and make their way into the frontal sinuses. From here they may penetrate the skull and cause death from meningitis.

Howlett, who describes the fly under the name of *Pycnosoma flaviceps*, states that at present there is a slight doubt as to the correctness of the identification owing to the absence of a really good specimen for comparison. It is probably viviparous, as no traces of egg or egg shells have been discovered, such a condition being common, according to the author, among those flies whose larvae feed on decaying animal matter.

[This fly is said to resemble *Chrysomyia*, but the three dark stripes on the dorsum of the thorax are wanting. The term "Screw-worm" up to the present has usually been applied to the larvae of *Chrysomyia macellaria*.]

G. C. L.

De Pássos Maia (Domiciano). **Casos de Myases Intestinaes.** [Cases of Intestinal Myiasis.]—*Revista Med. de S. Paulo.* 1913. June 30. Vol. 16. No. 12. pp. 223-226.

The author describes a hitherto unrecognized form of intestinal myiasis, supposed to be due to a coleopterous insect.

In the province of Minas, especially on the banks of the Rio Grande, cases of a peculiar kind occur which the common people ascribe to witchcraft. The affection begins with febrile attacks like those of ague, at comparatively distant intervals such as three months to a month. In the attack the three stages of rigor, fever and sweating may be distinguished just as in malaria, with the addition of attacks

of an epileptiform nature. The liver and spleen are never enlarged. The access generally lasts about 48 hours and is best treated by the administration of a purgative, quinine and arsenic having no effect. The effect of the purge is to expel a large number of insect larvae from the bowel along with a few perfect insects of Coleopterous type about half a centimetre in length, as to the identity of which the author cannot speak with certainty from want of the necessary technical knowledge. Samples of the material in question have, however, been sent to the Oswaldo Cruz Institute for examination and report.

J. B. Nias.

Wohl (Michael G.). **Myiasis, or Fly Larvae as Parasites of Man. With Report of a Case.**—*New York Med. Jl.* 1913. Nov. 22. Vol. 98. No. 21. pp. 1018-1020.

Cases dealing with Sarcophaga [flesh fly] infections are given. The larvae of these flies are not uncommonly found in the Tropics in ulcers or in syphilitic erosions of the nose and even in the ears. A series of seven cases of such infections is given.

The author's own case was especially interesting because it was one of what may be termed myiasis interna sarcophagidae, all the other collected cases having been external ones. The following is the record : A young man was suddenly seized by abdominal pain followed by profuse diarrhoea. An examination of the stools showed about a dozen small larvae. Some of these were fed on meat and in the course of twelve days became transformed into flies which were identified by Cresson as the *Sarcophaga sarraciniae*, Riley. After treatment by santonin and calomel no more larvae were expelled and since that time there has been no further indications of the infection. The stages of transformation were as follows :—Larva, September 22nd ; pupa, September 27th ; Fly, October 4th.

[The author's description of his case does not seem to exclude the possibility of the fly having deposited its eggs upon the faeces after they were passed. Such flies commonly do so and one must therefore be specially careful not to be misled by such an occurrence].

G. C. L.

Knab (Frederick). **The Life-History of Dermatobia Hominis.**—*Amer. Jl. Trop. Dis. & Preventive Med.* 1913. Dec. Vol. 1. No. 6. pp. 464-467.

The author discusses the recently published observations of the manner in which the *Dermatobia cyaniventris* disposes of its eggs. Surcouf's paper is specially referred to (see this *Bulletin* Vol. 2. p. 527). To the data presented there the author adds another observation recently communicated to him by Professor Urich of Trinidad. In 1905 the latter found *Janthinosoma* [species not stated] with eggs attached in the manner described by Surcouf. These mosquitoes were sent to the Bureau of Entomology in Washington at the time, but no satisfactory explanation was offered nor was the significance of the eggs suspected. Unfortunately the specimens cannot now be found.

Two theories are put forward as to how the eggs become fastened to the mosquito, MORALES of Costa Rica believing that the fly deposits them there herself, while RINCONES asserts (see this *Bulletin* Vol. 2, p. 528) that the eggs are laid upon foliage and thence reach the mosquito. Knab believes that there are a number of strong reasons why the explanation of SURCOUF and RINCONES cannot be accepted. First the eggs are found attached to a part of the mosquito's body which does not come in contact with the leaf surface when she rests upon it; *Janthinosoma* rests with the body well elevated upon its long legs. Secondly the eggs are attached in a definite way, by their bases and with the hatching end outward. This would hardly be the case if the eggs were picked up accidentally by the mosquito. Thirdly, were the eggs laid upon the surface of leaves, they would be much more likely to become attached to other insects, such as would not bring about their transfer to a suitable host. This last objection is strengthened by the fact that mosquitoes are not ambulatory insects, but on the contrary move about as little as possible when not on the wing.

The evidence, then, points rather to a definite instinct on the part of the mother *Dermatobia* to seek out the mosquito as the vector for her progeny. That the mosquito in every case observed has been a *Janthinosoma* is in itself significant. It is of further interest that this mosquito is hardly separable generically from *Psorophora*, which is believed by the natives of Tehauntepec to be the parent of the *Dermatobia* larva. The facts point very definitely to a complex and precise adjustment of the fly to the parasitic habit. The idea that the eggs of the fly are scattered by her promiscuously and picked up haphazard by other insects seems to the author impossible. On the other hand, the claim that the fly captures the mosquito and attaches the eggs to her needs verification.

The author concludes by hoping that reliable observers will soon determine beyond doubt the facts in connection with what promises to be one of the most remarkable of the many strange inter-relations occurring in connection with parasitism.

[Knab has evidently not seen ZEPEDA'S paper on the same subject. Readers should refer to the abstract of this published in this *Bulletin*, *loc. cit.*]

G. C. L.

LINGUATULIDA INFECTIONS.

Macfie (J. W. Scott) & Johnston (J. E. L.). **A Note on Five Cases of Porocephaliasis in Man from Southern Nigeria.**—*Lancet.* 1913. Nov. 15. pp. 1387-1389. With 1 text-fig.

Reference is made to papers by Sambon and Loehlein [see this *Bulletin*, Vol. 1, pp. 403 and 405]. Five cases are now described from Southern Nigeria, one each at Ibadan, Calabar, and Itu and two at Degama. The larvae from four of the cases were apparently those of *Porocephalus armillatus*, but those from the fifth seemed slightly different, being smaller and with their rings, which were broad and band-like, more closely set together. This however may have been due to the larvae being in an immature condition.

The pathological conditions which may be brought about by the parasites are discussed. Loehlein believes that they are harmless, but Chalmers thinks that they set up inflammatory changes in the lungs and peritoneum. In the first two cases recorded by the authors sufficient evidence of disease was found at the autopsies to account for death, without attributing any action to the presence of the larvae. Cases 3, 4 and 5 (these were recorded by Dr. Wilson) suggest, however, that the larvae may set up serious pathological conditions. No definite cause of death was discovered at the post mortem examinations and Wilson himself considered that the fatal termination in each case had been at any rate accelerated by the presence of the larvae. These three cases presented a peculiar clinical picture and the conditions found after death were somewhat similar. The chief symptoms were progressive weakness, oedema and dyspnoea without any very definite signs to account for the physical conditions. Waldow in Kamerun has described a case which died with symptoms of meningitis; cysts containing calcified porocephali were present in the liver, omentum, mesentery, and pleura. [See also this *Bulletin, loc. cit.*]

[Further details of this parasite and the lesions it produces should prove useful. Considering the frequency with which it is met with on the West Coast of Africa these should be easily obtained.]

G. C. L.

Mouchet (R.). **Notes Anatomiques et Médicales sur la Pathologie du Moyen Congo.**—*Arch. f. Schiffs- u. Trop. Hyg.* 1913. Oct. Vol. 17. No. 19. pp. 657-669. [Porocephalus. pp. 668-669.]

Porocephalus infections are common amongst the indigenous natives around Leopoldville in the Middle Congo. Mouchet has found larval forms in more than 20 per cent. of the autopsies which he has performed. The parasites were found in the peritoneum, in the different organs of of the abdominal cavity, and especially in the liver. There would seem to be reason for supposing that infections with this parasite have recently become more common because Broden and Rodhain, who worked out its complete cycle and published interesting monographs on the subject in 1908 and 1909, stated then that the parasite was very rare at Leopoldville.

G. C. L.

Gomes de Faria & Travassos (Lauro). **Beobachtung der Larve von *Linguatula serrata* Froelich als Darmparasit des Menschen in Brasilien und Bemerkungen über die Linguatuliden der Instituts-sammlung.** [Observation on the Larva of *Linguatula serrata* Froelich as an Intestinal Parasite of Man in Brazil and Remarks on the *Linguatulida* in the Institute's Collection.]—*Mem. Inst. Oswaldo Cruz.* 1913. Vol. 5. No. 2. pp. 123-127.

A case of human infection with the larva of *Linguatula serrata* is described [*Linguatula* Frölich 1789 is one of the four genera of the *Linguatulida*, the other three being *Porocephalus* Humboldt 1811, *Reighardia* Ward 1899 and *Raillietiella* Sambon 1909. Only the first two contain species parasitic in man].

The parasite was found in the intestine during an autopsy on a case of ankylostomiasis. It had the form of a flattened worm, was of a white colour, and of a length of about 4 mm. by 0·9 mm. in breadth. Microscopically it showed the typical structure of *L. serrata*, being furnished with 86 rings.

Such larvae have been found in man in Europe by Heschl, Virchow and others and in Central America by Darling and Clark. They chiefly occur in the lungs, more rarely in the liver, spleen and intestines. The adult parasites, though normally parasites of the nasal cavities of dogs and other carnivorous animals, have also been found in man. The nymphal stage which develops from the larva and resembles the adult has been called *Pentastoma denticulatum.*

Two other species of *Linguatula* are mentioned by the authors, viz. *Linguatula recurvata* Dies. 1836 from the right heart of *Dicotyles labiatus* [peccary] and *L. subtriquetra* Dies. 1836 from *Caiman sclerops.*

G. C. L.

RAT-BITE FEVER.

Dick (Mitchell Innes) & Rutherfurd (W. J.). **A Case of the So-called Rat-Bite Disease.**—*Brit. Med. Jl.* 1913. Dec. 20. pp. 1580–1581.

The authors report a case from England [locality not stated] of what they believe to be rat-bite disease acquired apart from bite by a rat. They suggest calling the disease by its Japanese name, wrongly calling it "Sokodu." [The Japanese name is "Sodoku."] They believe that other diseases can be conveyed by rat-bites, notably septic conditions and tuberculosis. The case on which the authors' paper is based is as follows :—

A man, aged 33, after a day's work during which he felt well, early in July 1913, was seized with slight pain in the splenic region. Shortly after he had a rigor, and about three hours later sweated profusely. After eight days of fair health he had a similar attack, and seven days afterwards, on July 20th, another. His clothing was then wringing with sweat, his tongue furred, the pulse 120, and the temperature 100·4° F., though as he had by this time reached the sweating stage he was probably defervescing. The next day he seemed quite well again. Five days later he again had an attack of the same sort, followed this time by a fairly severe urticarial eruption; a further attack occurred on July 26th, and another—the sixth—on August 2nd. Subsequently he had a few slight rigors and sweats, with nothing like the severity of the major attacks, and each one less than the one before; these occurred up to September 30th, on which date, however, he was looking very well and fit. Between these seizures he appeared in good health, and examination revealed only the presence of a very slight haemic murmur over the cardiac area.

Quinine and acetyl-salicylic acid were given, but neither of these drugs seemed to exert any control over the course of the disease, which lasted for over ten weeks and gradually died away of its own accord.

[It is by no means clear that the case was one of rat-bite fever, however closely the symptoms suggest it.]

G. C. L.

Nicholson (Frank). **A Further Case of Rat-Bite Disease.** — *The Practitioner.* 1913. Sept. Vol. 91. No. 3. (No. 543.) pp. 429–430.

The patient was a boy of ten living in North Lincolnshire and had been bitten by a rat on the left side of the hand six weeks before the symptoms developed. The bite had been only a trifling one and no attention was paid to it at first. The symptoms at the onset suggested septicaemia. A few patches of urticaria appeared on the legs, body and face, and there was some swelling of the back of the hand and up the arm to rather above the elbow with erythema. No pus formed. The temperature remained high for three months but finally the patient recovered.

G. C. L.

Surveyor (N. F.). **A Case of Rat-Bite Fever treated with Neosalvarsan.**—*Lancet.* 1913. Dec. 20. pp. 1764–1765.

A somewhat extraordinary case of this disease, seen in Bombay, the history being that the patient, a Hindoo lady, had been bitten on the right ear by a rat eight years previously. Attacks of fever lasting from three to seven days accompanied by urticarial eruptions on different parts of the body, especially the face, persisted over all these years in spite of treatment with quinine, arsenic, iron and mercury. After each attack the patient was left weaker and lost flesh and became very anaemic. When first seen by the author the appearance suggested Bright's disease, as the face was puffy, there was oedema of the extremities and marked anaemia. The roseolar wheals were the most characteristic feature of the fever.

As the patient's condition was getting worse an intramuscular injection of neosalvarsan, 0·7 gramme, was given, the temperature being 97°. After this for about a week the temperature varied between 99° and 102°, while there was severe pain at the site of the injection which was moderately swollen. Later the temperature came down to normal and remained so for a fortnight. After another month a little rise occurred, but since then the fever has disappeared and the patient has been putting on weight and getting stronger daily.

[This would seem to be an exceptionally chronic case of rat-bite disease. Hata (this *Bulletin*, Vol. 1, p. 407) describes eight cases treated satisfactorily with salvarsan. This would seem to suggest that the causal organism may be a spirochaete or an organism closely related to this group. It is just possible that it is a filterable virus.]

G. C. L.

MISCELLANEOUS.

BARBER (Marshall). **An Unusual Disease Prevailing in Epidemic Form at Buhi, Ambos Camarines, P. I.**—*Philippine Jl. of Science.* Sect. B., Trop. Med. 1913. Oct. Vol. 8. No. 5. pp. 369-372.

An epidemic of a peculiar disease is described. The symptom common to all the cases was swelling, often but not always painful, usually rather diffuse, but in some cases well defined and varying from a small lump to a tumour the size of half an orange. The swellings did not occur in the joints nor in the inguinal and axillary glands, but on the hands, arms, feet, legs below the knee, thigh and face. There was no pus formation as a rule unless surgical or cauterizing remedies had been applied. In about half the cases the starting point was described as a pimple, while in one it resembled an ant bite. In five or six of the cases an extremity, usually a finger, was first affected with subsequent extensions up the arm or leg. Three cases showed a vesicular eruption over the lesion.

The only positive laboratory findings were pyogenic cocci, and it is possible that many of the milder and perhaps of the fatal cases were due to pyogenic infection. The fact that the disease often began at a definite point in the skin, sometimes a minor lesion, and extended from there would support this view. Against a pyogenic infection however, is the fact of the disease taking on an epidemic form, but the people in whom it occurred may have had their resistance lowered by hardships of various sorts.

G. C. L.

VERGNE (R.). **"Espasmo Tropical": A Peculiar Disease of Great Malignancy, associated with a Parasite in the Blood.** *Jl. Trop. Med. & Hyg.* 1914. Jan. 15. Vol. 17. No. 2. pp. 20-21.

The name is given to a disease occurring in Porto Rico. According to the author it appears in two different forms—form "A" which may be benign or malignant, form "B" a typhus-like type. In the benign form of "A" the patient has trismus. In the malignant form in addition to this symptom there is a marked typhoid stage—high temperature, muttering delirium, weak and rapid pulse, vomiting of a dark greenish material; death supervenes in almost all the cases in two or three days.

Form "B" is always malignant. An eruption appears in the majority of cases localised to the abdominal region, small dark spots with raised edges which do not disappear on pressure. After the third day they turn to a red colour, and later to a bluish colour. There is high temperature, weak and rapid pulse, and complications such as bronchopneumonia, and acute endocarditis may appear. The author believes he has seen a parasite in the blood in these cases.

[The second form of the disease would appear to resemble ordinary typhus very closely; the author's parasite cannot be taken seriously.]

G. C. L.

Rodenwaldt (Ernst). **Kryptogenetische Muskelabszesse in den Tropen.** [Muscle Abscesses of Obscure Origin in the Tropics.]—*Arch. f. Schiffs-u. Trop. Hyg.* 1914. Jan. Vol. 18. No. 2. pp. 41-50.

Reference is made to muscle abscesses occurring in the Tropics. Such conditions are frequent and have been described by many observers, notably by Kuelz, [see this *Bulletin* Vol. 2, p. 92] and Ziemann [*loc. cit.* p. 422]. The author points out that in Togo they cannot be due to *Filaria loa* because that parasite is not really endemic in Togo, cases only occurring there in people who have resided in Kamerun. He also believes that, if these muscle abscesses are really due to filariae, they would be much more frequent than they are. For example, he only saw 16 cases of myositis purulenta amongst 600–800 men, of whom 50 per cent. were infected with *Filaria perstans* and *Onchocerca volvulus*. Very careful examinations of the pus in his cases failed to show any signs of the remains of worms. He therefore considers that the disease is one *sui generis*.

[*Filaria bancrofti* has usually been associated with such abscesses, not *F. loa*, *perstans* nor *Onchocerca volvulus*. This point does not appear to have been studied in the paper, but it is quite possible, as the author says, that some of these abscesses may be non-filarial.]

G. C. L.

Lesk (R.). **Einiges über Erkrankungen der Gallenwege und Leber. Ein tropenchirurgischer Beitrag.** [Observations on Diseases of the Bile-Duct and Liver. A Contribution to Tropical Surgery.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1913. Vol. 53. No. 3. pp. 386-415.

The author discusses the subject of infective inflammation of the gall-ducts and gall-bladder and the conditions arising therefrom. He quotes several cases from his own practice where symptoms resembling peritonitis led to laparotomy, but at the operation nothing was found except an enlarged liver and a little bile-stained fluid in the peritoneal cavity. He recommends the performance of cholecystotomy in such cases instead of simple closure of the abdominal wound, as the bile will generally be found to be infected with coli-form organisms. These conditions of infective hepatitis, so common in the tropics, are apt to be masked by secondary symptoms such as pulmonary congestion, or nephritis with anuria, so that a routine examination of the region of the liver should never be omitted in dealing with patients in the tropics presenting such symptoms; otherwise the primary focus of disease may be overlooked. [The author's style is rather diffuse owing to his profuse quotation of authorities, but in spite of this the paper will repay perusal by those interested in the subject.]

J. B. N.

Ravenhill (T. H.). **Some Experiences of Mountain Sickness in the Andes.**—*Jl. Trop. Med. & Hyg.* 1913. Oct. 15. Vol. 16. No. 20. pp. 313-320.

Mountain Sickness, known as Puna in Bolivia and as Soroche in Peru, is common in the mountainous districts of the Andes. Ravenhill

gives the following symptoms as occurring in puna of a normal type. The majority of newcomers express themselves as being quite well on first arrival. As a rule, however, towards the evening the patient begins to feel rather slack and disinclined for exertion. He goes to bed, but has a restless and troubled night, and wakes up next morning with a severe frontal headache. There may be vomiting, frequently there is a sense of oppression in the chest, but there is rarely any respiratory distress or alteration in the normal rate of breathing so long as the patient is at rest. He may feel slightly giddy on rising from bed, and any attempt at exertion increases the headache, which is nearly always confined to the frontal region.

On examination the face may be slightly cyanosed; the eyes look dull and heavy, the tongue is furred. The pulse is nearly always high, being generally in the neighbourhood of 100 or over. The temperature is normal or slightly less. The patient feels cold and shivery. The headache increases towards evening, so also does the pulse-rate; all appetite is lost, and the patient wishes to be left alone—to sleep if possible. Generally, during the second night he is able to do so, and as a rule wakes next morning feeling better; the pulse-rate has probably dropped to about 90; and the headache is only slight. As the day draws on he probably feels worse again, the symptoms all tending to reappear on any exertion; if, however, he keeps to his bed, by the fourth day after arrival he is probable very much better, and at the end of a week is quite fit again. The most prominent feature in this type of puna is frontal headache and extreme lassitude.

In addition to this normal type cardiac and nervous types are described. In the former the symptoms are those of an acute heart condition coming on in a perfectly healthy man. Dyspnoea appears, the pulse is hardly perceptible, the lips and ears are cyanosed and the heart sounds are very weak. The patient then may pass into an unconscious condition and quickly die. In one case, presenting symptoms such as the above, removal to a lower altitude resulted in the disappearance of the symptoms and recovery.

In the nervous type the simplest form consists of a nervous excitation and buoyancy, which has been described as a sense of being lifted into the air by a balloon. It may precede an attack of the ordinary type. There may be a tendency to twitching of the lips and trembling of the limbs. Generally it passes off, but the nervous symptoms may develop to such a degree as to become alarming. In these severe forms delirium may come on with convulsions and loss of memory. Vertigo is also a prominent symptom.

As regards vomiting and epistaxis, these vary; the former occurred in about half the cases, was never serious and soon passed off; the latter occurred only in about 20 per cent. of the cases and was hardly ever very profuse. Many other interesting observations upon the condition are given in the paper, viz., the influence of alcohol, muscular work, tobacco, sex and age, and effects of slow or rapid ascent.

The treatment of the normal type of puna resolves itself into rest in bed with the windows well open, and at least a day of quiet after all symptoms have disappeared. Aspirin in doses of 1 gramme to begin with, and 0·5 grammes for four hours afterwards quickly relieves the headache. Phenacetin does not act so well, nor are inhalations of oxygen of much effect. In severe cases removal to lower altitudes is

essential. The fact of a man having lived in the altitudes safely does not mean that he is immune from their effects when he revisits them. A table analysing 38 cases is given and a series of red blood cell counts is appended.

G. C. L.

Stevenson (Sinclair E.). **Splenomegaly.**—*Brit. Med. Jl.* 1913. Oct. 4. pp. 847-849.

A description of a case of splenomegaly in a girl in South Africa. The treatment adopted was removal of the spleen. The patient recovered rapidly from the shock of the operation and three days later had made considerable improvement. The patient was alive twelve days after, but further progress is not stated. Careful examination of the organ after removal showed no signs of micro-organisms.

[Cases of splenomegaly of such a nature are frequently found in the Tropics apart from any question of leishmaniasis. They have been described in Egypt, the Philippines, etc. Their etiology is uncertain. So far no parasites have been found in them. Whether they are the same as the cases of splenomegaly occurring in England and Europe is not known.]

G. C. L.

Castellani (Aldo). **Further Observations on the Fungi of the Genus Endomyces found in Man.**—*Arch. de Parasitologie.* 1913. July 10. Vol. 16. No. 2. pp. 184-186.

The author believes that the classification of the Endomyces cannot be based purely upon morphology as used to be done in the past, but that the sugar reactions should be studied, as well as the action on milk, gelatine, serum, etc. Biological tests should also be used where possible. The Endomyces he has studied have been isolated mostly from cases of bronchomycosis and thrush, also from saliva and stools of cases of chronic intestinal diseases (sprue, etc.), as well as from other diseases and from normal individuals. He has studied an Endomyces isolated from the air, and several isolated from tea. It is concluded that a plurality of species of this genus is observed in man, 19 species, in addition to *Endomyces albicans*, having been so far isolated by the author: 13 species from sputum, bronchial expectoration, thrush lesions, otomycosis; six from stools, scrapings from the intestines, etc. Besides these 19 species from man, four new species have been isolated from tea and one from air. The 24 new species of Endomyces can be easily differentiated by their sugar reactions and their action upon milk, gelatine and serum.

A table giving the cultural reaction of the various species mentioned is appended.

G. C. L.

Kopp (Karl). **Zur Frage des Bevölkerungsrückganges in Neupommern.** [The Decrease in Population in New Pomerania.]—*Arch. f. Schiffs- u. Trop. Hyg.* 1913. Nov. Vol. 17. No. 21. pp. 729-750. With 1 text fig.

The author discusses the cause of the reduction in the number of the

native population which is going on in New Pomerania, an island in the Bismarck Archipelago, east of New Guinea. His observations relate more especially to the northern coast of the island. He states that the children are born healthy and in sufficient number, the proportion of children under 15 years of age to adults being higher than in most European countries, but that the adult native is not long lived and the mortality among the women is high owing to the hard work to which they are put. He attributes the decline not to the importation of European diseases, such as syphilis and tuberculosis, as commonly thought, but to the prevalence of endemic tropical diseases, the general hygienic conditions of the natives being decidedly bad. The diseases enumerated and discussed by the author are syphilis, yaws, malaria, tuberculosis, leprosy, filariasis, ankylostomiasis and other worm infections, dysentery, beriberi, ulcerative stomatitis, smallpox and skin diseases. Of these malaria does much harm. Ankylostomiasis is very common. He suggests that natives of the north coast, who clinically are strongly suspect of tuberculosis but give negative tuberculin reactions, may be suffering from the *Paragonimus westermani*. No examinations of the sputum for the eggs of this parasite are, however, reported. Beriberi is only found in imported workers who live on rice; it is rare among the indigenous natives. Smallpox, introduced in 1890 from the Dutch Indies, caused a heavy mortality, and many natives even now bear the scars of the disease on their faces.

With regard to the measures necessary to check the decrease in population the author thinks that a great need is the provision of proper water supplies, in order to reduce the prevalence of worm disease, and the teaching of more civilised manners with regard to the disposal of excreta is also urgent. As there are no white settlers on the coast in question instruction in these matters falls to the lot of the medical man.

As to the exact amount of depopulation going on, it is difficult to form a correct opinion, from the impossibility of making a complete census of the natives, but there seems to be no doubt that their numbers are diminishing, which the author thinks a very serious matter for the future of the colony.

G. C. L.

By Royal Warrant to H.M. the King.

IZAL

A TRIUMPH OF CONCENTRATION.

The pioneer modern high-power germicide. Officially adopted throughout the British Empire. Uniform germicidal power guaranteed. Mixes equally well with soft, hard and brackish, or salt water.

MEDICAL IZAL

Specially prepared for Medical and Surgical work. Used with marked success as an intestinal antiseptic in the treatment of Dysentery, Enteric Fever, Cholera, etc.

IZO-IZAL

A combined germicide and pesticide. Unrivalled for the destruction of insects and larvae, and microbes, at one operation. 1 part in 30 000 destroys mosquito larvae.

AGENCIES THROUGHOUT THE EMPIRE.

Samples and Scientific Reports sent free on application to the Manufacturers:

Newton, Chambers & Co., LTD.,

THORNCLIFFE, near SHEFFIELD.

Recently Published on behalf of the Sudan Government.

THE FOURTH REPORT OF THE

WELLCOME TROPICAL RESEARCH LABORATORIES,

KHARTOUM.

Since the Third Report was issued, in 1908, a great amount of valuable research work has been accomplished.

This Fourth Report contains the facts, observations and discoveries recently brought to light and is the actual record, at first hand, of new contributions to the solution of problems of deep and world-wide importance.

Volume A.—**Medical.** Large Quarto. Cloth, pp. 404, and 174 illustrations, with many fine coloured plates. Price 21s. net.

Volume B.—General Science. Pp. 333, and 189 illustrations, with many coloured plates. Price 18s. net.

Second Review of some Recent Advances in Tropical Medicine, &c. (Being a Supplement to the Fourth Report.) Pp. 428. Price 15s. net.

First Report, published in 1904. Price 12s. 6d. net.

Second Report, published in 1906. Price 17s 6d. net.

Third Report, published in 1908. Price 21s. net.

Supplement to Third Report.—"REVIEW OF SOME OF THE MORE RECENT ADVANCES IN TROPICAL MEDICINE, &c" BY A. BALFOUR and R. G. ARCHIBALD. Published in 1908. Price 10s. 6d. net.

These publications show the advance of the bacteriological and physiological study of the disorders affecting both man and beast in the Tropics, and also afford valuable information on the pioneer work of research which is the basis of the industrial development of a country newly opened to civilization.

PROSPECTUS POST FREE.

BAILLIÈRE, TINDALL & COX,

8, Henrietta Street, Covent Garden, London.

Journal of Economic Entomology.

OFFICIAL ORGAN OF THE

American Association of Economic Entomology.

EDITORIAL STAFF.

EDITOR: E. PORTER FELT, State Entomologist, New York.
ASSOCIATE EDITOR: W. E. BRITTON, State Entomologist, Connecticut.
BUSINESS MANAGER: A. F. BURGESS, Agent and Expert, U.S. Bureau of Entomology, Massachusetts.

ADVISORY COMMITTEE.

C. P. GILETTE, State Entomologist, Colorado.
W. E. HINDS, State Entomologist, Alabama.
L. O. HOWARD, Chief Bureau of Entomology, United States Department of Agriculture.
S. A. FORBES, State Entomologist, Illinois.
H. T. FERNALD, Professor of Entomology, Massachusetts Agricultural College.
HERBERT OSBORN, Professor of Zoology and Entomology, Ohio State University.

Published bi-monthly, containing papers and articles by leading Economic Entomologists. Also prints the proceedings of the above Association together with the reports of the official meetings of its sections on Horticultural Inspection and Apiary Inspection.

This Journal is Invaluable to workers in entomology.

Subscription price in the United States and its possessions, Dominion of Canada and Mexico, $2.00 per year. To all other countries, $2.50.

For further particulars and sample copy, address—

Mr. A. F. BURGESS, Melrose Highlands, Mass., U.S.A.

HOWARDS' QUININE.

(Howards & Sons, Ltd., are the **only** makers of Quinine Sulph. in England).

It is essential to use only the purest Quinine and tablets of accurate dose. To ensure this specify Howards' English Products.

ANÆSTHETIC AETHERS IN SEALED TUBES FOR THE TROPICS.

HOWARDS & SONS, Ltd. Ilford & Stratford, London, E.

The Annual Subscription for the Tropical Diseases Bulletin is TWENTY-ONE SHILLINGS post free.

Subscriptions should be sent to Messrs. BAILLIÈRE, TINDALL and COX, 8, Henrietta Street, Covent Garden, London, W.C., who are also the advertisement agents.

The Bulletin appears, as a rule, twice a month.

Cloth cases for binding the Bulletin can be obtained from Messrs. BAILLIÈRE, TINDALL and COX, price One Shilling and Sixpence post free.

The Tropical Diseases Bureau publishes also the TROPICAL VETERINARY BULLETIN, quarterly, Annual Subscription Ten Shillings, single numbers Three Shillings post free; to be obtained from the above agents.

TO ADVERTISERS.

To ensure the insertion of an Advertisement in any particular number of the Bulletin the copy must reach Messrs. BAILLIÈRE, TINDALL & COX not later than ten days before the date of publication, i.e., by the 5th or 20th of each month for insertion in the issue of the 15th or 30th respectively.

BUREAU NOTICES.

Works in the Bureau Library may be consulted between 10 and 5.30.

The Director can be seen between 10 and 1; for a later hour an appointment should be made.

The Director will be glad to receive early copies of works or reprints on Tropical Diseases for notice in the *Bulletin* and for the Library. To be addressed—Tropical Diseases Bureau, Imperial Institute, London, S.W.

(Telephone:—Kensington, 5188.)

BOOKS RECEIVED.

PATTON (Walter Scott) [M.B. (Edin.), I.M.S.] & CRAGG (Francis William) [M.D. (Edin.), I.M.S.] A Text Book of Medical Entomology.—xxxiv+768 pp. Crown 4to. With 89 plates. 1913. London, Madras & Calcutta: Christian Literature Society for India. [£1. 1s. net, or Rupees 15-12-0 net.].

MENSE (Carl). Handbuch der Tropenkrankheiten. Zweite Auflage. 2. Band.—xvi+747 pp. Imperial 8vo. With 200 text figures, 10 black & white & 2 coloured plates. 1914. Leipzig: Verlag von Johann Ambrosius Barth. [Paper covers 40 Mk., bound 42 Mk.]

SCHILLING, Torgau (Dr. V.). Angewandte Blutlehre für die Tropenkrankheiten.—viii+170 pp. With 1 black & white and 3 coloured plates and 17 text figs. 1914. Leipzig: Verlag von Johann Ambrosius Barth. [Sonderabdruck aus dem *Handbuch der Tropenkrankheiten* (MENSE).]. [8 Mk.]

FÜLLEBORN (Prof. Dr.). Die Filarien des Menschen.—Abdruck aus: *Handbuch der pathogenen Mikro-organismen* (KOLLE und WASSERMANN). Zweite vermehrte Auflage. 8. Band. pp. 185-344. With 6 plates and 41 text figures. 1913. Jena: Gustav Fischer.

FORTY-SECOND ANNUAL REPORT OF THE LOCAL GOVERNMENT BOARD, 1912-13. Supplement containing the Report of the Medical Officer for 1912-13. — lxx+412 pp. 1914. London: H.M. Stationary Office. [Cd. 7181]. [Price 4/-.]

QUARTERLY LISTS OF REFERENCES.

For the benefit of recipients of the Bulletin who wish to make a **Card Catalogue**, or to preserve a consecutive record of the references on any subject, the Director is willing to supply **galley proofs** [' *Korrekturbogen* ' ; ' *Première* '] of the **Quarterly Lists of References** (printed on one side of the page) at the subscription price of **Two Shillings** per annum. Application should be made direct to the Bureau.

CONTENTS.

PAGE

TROPICAL SKIN DISEASES.

SABELLA ; MAZZOLANI : Skin Diseases in Tripoli 235
CHALMERS & O'FARRELL : Pyosis tropica in the Sudan .. 236
WISE & MINETT ; CULPEPPER : Tinea cruris 236
CONOR & MARCHETTI ; SPLENDORE : Blastomycosis in Tunis and Brazil 237
SMITH : A Note on Pinta 237
PINOY : Actinomycosis and Mycetoma 238
SUTTON ; CARINI ; ARLO ; BRAULT : Mycetoma 238-239
WIENER : A Case of Ulcus tropicum 239
MARTINI : A Case of Granuloma venereum 240
WEINSTEIN : A Case of Ainhum in the Canal Zone 240

YAWS.

KLOPPERS : Yaws in Java 241
KERNÉIS, MONFORT & HECKENROTH : Yaws in French Guinea 241
WINDWARD ISLANDS ; COCKIN ; RADLOFF : Treatment by Salvarsan 241-242
SCHERSCHMIDT ; WECK : Treatment by Joha 242

SLEEPING SICKNESS.

SIERRA LEONE : Sleeping Sickness in Sierra Leone 243
CHATARD & GUTHRIE : A Case of Human Trypanosomiasis .. 243
THIROUX & PELLETIER : Acute Meningitis in Human Trypanosomiasis 243
LUNDIE : The Detection of Trypanosomes in Animals.. .. 244
ROUBAUD & LAFONT : Transmission Experiments with *Stegomyia fasciata* 244
DUKE : Wild Game and Trypanosomiasis in Uganda 245
BECK : The Human Trypanosome found in the Rovuma District 246
PRENTICE : Sleeping Sickness, Tsetse and Big Game in Nyasaland 246
KOLLE, HARTOCH & SCHÜRMANN : Treatment by Antimony Preparations 247
BRIEGER & KRAUSE : Treatment by Tryposafrol 249
CIUCA : Abscess Formation as an aid to Treatment 249
HECKENROTH & BLANCHARD : Subdural Injection of Neosalvarsan in Human Trypanosomiasis 251
GROSSULE : On the Curability of Sleeping Sickness 252
LAVERAN & MARULLAZ : Attempts to Immunise against Nagana 252
DELANOË : Variations in Infective Power and Virulence in *T. dimorphon* 253
LAVERAN : Debab and *T. soudanense* 254
BAYMA : *T. cruzi* found in Man in S. Paulo 254

MALARIA.

von EZDORF : Malaria in Arkansas 256
PROPAGANDA ANTIMALARICA : Contents.. 256
ETTINGER : Three Cases of Malaria with Unusual Symptoms.. 256
GOODHART : Amnesia in Malaria 257
GIEMSA & WERNER : Treatment Experiments with Quinine Derivatives 257
SPAGNOLIO : Quinine Tannate in Infantile Malaria 258
BAETGE ; WERNER : Treatment with Neosalvarsan and Salvarsan 258

MALARIA.—*continued.* PAGE

DEPPE : Perchloride of Mercury in Malaria with Latent Sepsis 258
CARTOLARI : Splenectomy 258
BERTARELLI : Malarial Problems 259
ROSS, CHRISTOPHERS & PERRY : The Spleen Rate in London School Children 259
WATSON : The Prevention of Malaria 260
ZIEMANN : Cultivation of Malarial Parasites 260

BLACKWATER FEVER.

BARRATT & YORKE : The Production of General Symptoms in Haemoglobinaemia 261
BRUCE-PORTER : Case treated by Intravenous Injections .. 261

INSECT TRANSMITTERS OF DISEASE.

SIMPSON : Entomological Research in Sierra Leone 262
HONG KONG : The Stegomyias of Hong Kong 263
LEGENDRE ; DRAKE-BROCKMAN : Notes on Stegomyia .. 263
LEGENDRE : Destruction of Mosquitoes 264
BALFOUR : Ants as Disease Transmitters 264
KING : The Mounting of Mosquito Larvae 264

SNAKE BITE.

REINHOLD ; WHITE : Cases of Snake Bite in India 266
WALL : Treatment of Snake Bite.. 266
DAY : Case of Snake Bite in America 267
JACKSON : Case of Snake Bite in England 267
STEVENSON ; ACTON & KNOWLES : Preparation of Anti-venomous Serums 268-269
ACTON & KNOWLES : Dose of Venom given by Cobra and by Echis at a Single Bite 270
BARRATT : The Venom of *Echis carinatus* 271
ANDREWS : Experiments with Snakes in South Africa.. .. 271

MYIASIS.

RIELEY & HOWLETT : Screw Worm Disease in Behar 273
MAIA : Intestinal Myiasis possibly due to Coleoptera 273
WOHL : Sarcophaga Infections 274
KNAB : Life History of *Dermatobia cyaniventris* 274

LINGUATULIDA INFECTIONS.

SCOTT MACFIE & JOHNSTON ; MOUCHET : Porocephalus in Man 276
GOMES de FARIA & TRAVASSOS : *Linguatula serrata* in Man .. 277

RAT BITE FEVER.

DICK & RUTHERFURD ; NICHOLSON ; SURVEYOR 278-279

MISCELLANEOUS.

BARBER : An Unusual Disease in the Philippines 280
VERGNE : An Unusual Disease in Porto Rico 280
RODENWALDT : Muscle Abscess in the Tropics 281
LESK : Diseases of the Bile Duct and Liver in the Tropics .. 281
RAVENHILL : Mountain Sickness in the Andes 281
STEVENSON : Splenomegaly 283
CASTELLANI : Endomyces found in Man.. 283
KOPP : Decrease in Population in New Pomerania 283